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COMMUNICATIONS

TUMOURS OF THE LACRYMAL GLAND

BY

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WEYMOUTH

TUMOURS of the lacrymal gland are relatively rare. Less than 300 have been reported, the earliest record being in 1598 by Fabricius Hildanus in *Observationes Chirurgicae.*

Warthin, in 1901, collected 132 cases and drew attention to the similarity of lacrymal and salivary gland tumours. In 1904 Verhoeff published five cases which had come under his care. Greeves, in 1914, collected 42 cases occurring in the previous 15 years and attempted to make a classification based on the pathological reports as described by the various writers, illustrating various types by description of four tumours which he had examined. Shortly after this publication Lagrange and Birch-Hirschfeld added to the literature in this subject. In 1922, L. L. Lane collected and analysed all the published cases of lacrymal gland tumours. After an exhaustive search she eliminated all duplicates and doubtful cases and was able to find in the literature 112 authentic cases published since Warthin's paper, together with 15 reports overlooked by the latter observer.

I have been able to find a further 17 cases reported in the last eight years, together with the following case which came under my care.

Apart from the pathological nature of the growth this case is of interest as it shows the possibility of recovery of useful vision even

when the optic nerve has been subjected to very considerable stretching over a long period.

Mrs. T., aged 37 years, first came under my care in May, 1926, with a large degree of proptosis of the right globe. She stated that two years previously she had noticed a small lump under the outer part of the right eye-brow, which was freely movable and

PLATE 1.

which could be pressed back " into the eye socket." There was no history of any accident and the family history was good. The lump gradually increased in size without pain and for six months no other symptoms were noticed. About this time diplopia began to develop and the eye was noticed to " stand out." Vision gradually became worse with the increase of proptosis and when she was first seen had decreased to perception of light only. The condition progressed; when she came for advice the exposure of the cornea was causing considerable pain, which she controlled by continuous moist applications, while the increasing size of the growth and the consequent pressure from behind gave her the impression that the eye was about to burst.

When I first saw her (Plates 1 and 2) the right eye appeared to be dislocated out of the orbit. The upper lid was so stretched over the protruding growth that it did not cover the whole of the cornea. The globe was actually pushed over the inferior margin of the orbit medialwards: the medial two-thirds of the lid being tucked up behind it and the inner portion of the bulbar conjunctiva

PLATE 2.

was in contact with the skin of the side of the nose. Reposition by pressure on the eye through the lid was impossible owing to a definite resistance within the orbit.

The eye itself showed marked venous congestion and the exposed lower part of the cornea was hazy and stained deeply with fluorescein. It was covered with an exudate of lymph and the exposed conjunctiva was chemotic.

Viewed from in front the visual axis was directed towards the bridge of the nose, the pupil being displaced 19 mm. downwards and 8 mm. inwards.

The upper lid moved freely over the growth, which came forward out of the orbit from the region of the lacrymal gland. On

attempted movements of the eye the growth moved within small limits over the bony wall of the orbit, while to palpation a smooth fleshy mass was felt relatively fixed. The eye movements were restricted almost completely.

A clear view of the fundus could not be obtained, but the retinal veins seemed to be engorged and the arteries somewhat smaller

PLATE 3.

than normal. There were no glandular enlargements and an X-ray was negative. The vision of the right eye was perception of light only, while that of the left was 6/9 part.

After admission I decided to remove a portion of the growth for pathological examination and under novocaine an incision was made below the brow and over the swelling. An encapsuled tumour was found entirely separate from the skin and bone. Owing to the fact that the eye was practically dislocated out of the orbit it was found possible to follow the tumour backwards without difficulty. It extended some 35 mm. towards the apex of the orbit and could be moved easily in a socket of fat, giving the impression that its removal would be simple. Although at that time no

immediate removal had been entertained, the growth was removed without difficulty: the only attachment being to the conjunctiva of the upper fornix.

The wound was closed and a small drainage tube inserted in the outer angle. This was removed in 24 hours and the wound healed by first intention.

June 11. The eye was then retracted in the orbit, the movements being somewhat restricted in all directions. The upper lid could be raised some 50 per cent. of the normal (Plate 3).

July 2. The eye movements were almost full. The edge of the upper lid was at the level of the pupil and the cornea was almost clear. There was no diplopia and the vision was 6/60, with correction 6/36.

Pathological Examination

The tumour is encapsuled and is roughly spherical, being 35 mm. in its largest diameter. It is solid and cuts like a fibroma.

Under low-power magnification the capsule can be seen to be formed of a delicate fibrous tissue membrane the fibrillae of which run into the tumour tissue itself.

The growth is vascular, the size of the vessels varying in all degrees. Some of these vessels have well-marked walls while in other places the wall is either very thin or absent altogether.

In one place beneath the capsule, but separated from it by tumour cells, are the remains of the lacrymal gland. Parts are normal in appearance but as the remains are followed deeper into the growth atrophic changes are noticed and the gland tubules are surrounded by hyaline tissue. Further towards the centre there are islands of this hyaline tissue where the remains of the gland tubules have entirely disappeared.

The tumour proper consists of a dense stroma of cells, there are no areas of degeneration and it is solid throughout. The cells are elongated and spindle-shaped, being supported by a definite stroma; in places where the cells are not so closely packed this stroma is markedly in evidence and has the appearance of a fibroma. This is a spindle-celled (fibro-) sarcoma.

In all cases of malignant growth the question arises as to whether a more radical operation than the simple excision of the tumour should be performed. In this case I had to consider whether the eye should be excised and the orbit exenterated. As there was a long history with an encapsuled growth I felt that no harm could come from watching the case, especially as the vision had improved

after the operation. Time has now justified this decision and it is now four years since the removal of the growth and there is no evidence of either local recurrence or metastatic formation.

I have recently examined the patient and the present condition is completely satisfactory (Plate 4). The upper lid shows a slight ptosis, but is well clear of the upper limit of the pupil. The patient

PLATE 4.

states that the eye does not run freely with tears during emotion like the left, but otherwise she notices nothing unusual. The eye movements are full in all directions.

The cornea is clear but with focal illumination faint scarring can be seen in the superficial layers, more marked along the upper edge of the area which was previously exposed. The fundus is normal apart from the disc, where there is more connective tissue than on the other side.

The vision of the right eye is 6/36, with correction of − 1·0 D. sph. and − 2·0 D. cyl. axis 105° 6/5 part. The field is full both to white and colours. The vision of the left eye is 6/9 with correction + 1·0 D. sph. and + 0·50 D. cyl. axis 90° 6/5.

In the past considerable confusion has existed in the nomenclature of lacrymal gland tumours. A consideration of the pathological diagnoses made by the original observers shows a diversity of terminology; almost all the existing terms have been used. Warthin's list of cases when classified included 44 varieties of growths. Of the 17 cases published in the last eight years ten were mixed tumours, two, cysts, three, of no very definite pathological diagnosis, one, a fibroma and one, a lymphoma.

Apart from neoplasms lacrymal gland enlargements are caused by cystic dilatations, inflammatory swellings and simple hypertrophy, while secondary enlargements associated with Miculicz's syndrome and the leukaemias are well known.

Tumours, excluding cysts, can be divided into two main classes, *a*. Mixed tumours. *b*. Tumours, the histological features of which suggest sarcoma.

Mixed tumours, endotheliomata, or tumours of mixed mesoblastic tissue as they have been described by different writers form the large majority of growths of the lacrymal gland.

Sections of such tumours show a heterogeneous mixture of tissues in varying combinations: columns of endothelial cells, spindle-shaped cells, connective-tissue elements, myxomatous tissue in varying degrees of degeneration, cartilage, epithelial-like cells with areas of keratinization and prickle cells are found. Greeves classifies them into three types; first, a complex type in which gland-like structures, squamous epithelium with prickle cells and often cartilage are found. Second, the type in which myxomatous stroma is prominent, which contains columns of epithelial-like cells. Third, a cylindroma type resembling adenoma and adeno-carcinoma. Probably many of the cases described as adenoma or adeno-carcinoma belong to this class.

Similar growths are met with in the salivary glands and according to some authorities (v. Ohlen, Kelly and others) have been declared to be endothelial in origin. Warthin supported the endothelial origin of the lacrymal gland growths of this type, at the same time pointing out their dissimilarity to endotheliomata occurring elsewhere in the body. These latter growths are much more malignant and are not composed of such a mixture of tissues. For this reason Collins and Mayou prefer to call the lacrymal growths tumours of mixed mesoblastic tissue.

The endothelial origin has, however, been strongly contested. Wood, in 1904, in his collected cases of salivary gland tumour, stated that 95 per cent. were of the mixed variety and he came to the conclusion that the glandular and prickle cell elements were epithelial in origin. Verhoeff supported this in his study of lacrymal gland tumours and was able to demonstrate to his own satisfaction that these growths always developed from epithelial

cells. He suggested that the origin was partly epiblastic and partly mesoblastic and that the cartilage present was an atypical development of the stroma cells. The later reports of Birch-Hirschfeld supported this view. It has been suggested that the complicated nature of these growths would appear to indicate that they do not develop from normal gland structure, but from cells which have been misplaced in embryonic development. Although the mixed epiblastic and mesoblastic origin of these growths would appear to be generally accepted, some authorities, notably Krumpcher, suggest a purely epithelial origin accounting for the mucoid and cartilaginous tissue by a metaplasia of the epithelial elements.

The stroma of the normal lacrymal gland contains lymphoid tissue (Axenfeld) and it is therefore conceivable that lymphoma or lympho-sarcoma may develop. Lymphomata arising in this position are exceedingly rare; I have been able to trace only one such authentic growth, published by Pfingst and discussed at the American Ophthalmological Society where Verhoeff compared it to a similar case which had come under his care. He (the latter) appeared to have some doubt, however, as to the true lymphoid origin of these growths.

It has been stated that sarcoma of the lacrymal gland does not occur. In later years this diagnosis has rarely appeared, but without an exhaustive search I have been able to find 25 cases published under the heading of sarcoma, lympho-sarcoma or myxo-sarcoma. An analysis of the diagnoses shows that in 12 cases the growths were of small round cells, occurring unilaterally and not associated with swellings of the salivary glands; seven undoubtedly belonged to the mixed tumour class; two were without adequate diagnosis and one was described with minute histological detail as a spindle-cell sarcoma. Considerable doubt has been expressed as to whether these small round-celled growths are true sarcomata. Most of the cases have been called lympho-sarcoma but the clinical findings of the majority do not bear out the diagnosis of malignancy. Their rate of growth is slow and metastases practically unrecorded. Greeves points out that small round-celled sarcomata do occur and cites a case in a child where a rapidly fatal result was recorded. He suggests that inflammatory and secondary enlargements of the gland may account for many of the cases which have been published in this class. Such enlargements due to overgrowth of lymphoid tissue may occur in connection with leukaemia or pseudo-leukaemia, while mumps, syphilis and tubercle have been known to produce enlargement of the gland.

Habermann, in 1918, reported a case of spindle-celled growth. He concluded a detailed histological description by stating that " although in several cases the tumour cells appeared to grow out

of the cells of the vascular epithelium yet in spite of this the growth was a pure sarcoma not a mixed form nor yet a transitional form, for an 'endothelial tube' (which proved that the vessels grew independently of the growth) was always to be seen under closer examination."

It would appear that the great majority of the lacrymal gland tumours are made up of a mixture of tissues of mesodermal and ectodermal origin and therefore should be regarded as mixed tumours. In some cases, however, the stroma is so definitely predominant that the mixed elements may be overlooked and a mistaken diagnosis made. The stroma of the first case in Greeves's series was made up of spindle cells and resembled a spindle-celled sarcoma, but, apart from the presence of prickle cells and epithelial elements, the vascular and mucoid tissues were not present in the proportion as found in the normal gland. This leads to a point of importance in diagnosis, viz., the pathological nature of a tumour cannot be determined by the excess of a specific type of cell only, unless the other tissues are present in the same proportion as in the normal gland. Provided that the parenchymatous elements are present in normal proportion then a tumour, arising from the supporting tissues and having the characteristics of embryonic connective tissue, must be sarcomatous.

Although it is possible that many of the cases of lympho-sarcoma may be inflammatory or secondary enlargements, yet, if lymphoma can develop, it would appear that a primary tumour of this type, which departed from the normal characteristics, would constitute a lympho-sarcoma.

Lacrymal neoplasms occur chiefly in patients past middle-life; when occurring in children they are almost always rapidly fatal. The average history is about two years and pain except in the late stages is rare. The effects on the globe depend on the size of the growth; diplopia is not as constant as would be expected. Defective vision is chiefly due to optic atrophy, hyperaemia of the disc and corneal exposure. The defective vision undoubtedly accounts for the absence of diplopia in many cases. Some authors have stated that lacrymal growths are relatively benign, but a study of the literature cannot support this. Lane recorded 20 per cent. of recurrences and, in 95 cases, 12 per cent. were fatal, seven of these from metastatic formation. Fatal results were recorded in 20 per cent. of the cases in Birch-Hirschfeld's series.

Treatment consists of an early and complete removal of the growth retaining the globe when possible. The case which I have described shows the possibility of recovery of useful vision even when an external examination showed very little hope of recovery.

In the majority of cases the growth can be removed through an incision along the upper edge of the orbit, although, if much

adhesion to surrounding tissues is found, resort may have to be had to the method of Krönlein. Birch-Hirschfeld expressed the opinion that unless the growth is removed complete, the malignancy is increased and, for this reason, the Krönlein method of exposure, offering as it does freer access, is recommended by some authorities.

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A RAPIDLY-GROWING MALIGNANT TUMOUR OF THE LACRYMAL GLAND

BY

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PATIENT, a Chinese, Li Shen-Chuin, a farmer, aged 21 years. Case No. 16216. Seen at Wesleyan Mission Hospital, Paoking, Hunan, China, April 7, 1930.

Clinical History.—" Patient came to hospital on April 2, 1930, for treatment for his eye which was covered by a projecting tumour. This tumour, he states definitely, has only grown during the last 40 days, previous to which he had nothing the matter at all. For the past 20 days it has been getting red and inflamed and for 12 days he has noticed the gland in front of his ear which is painful.

" Present Condition: The patient is a healthy well-nourished farmer boy. Temperature and pulse normal. No sign of any disease beyond his eye trouble. Skin particularly clean and healthy. There is a large swelling of the whole of the upper lid of the right eye, which stands out almost at right angles to the face. The

projecting conjunctiva along the lower edge of the upper lid is thick and swollen and shows a tendency to bleed readily if touched. The whole lid feels oedematous or pulpy, but just below the upper margin of the orbit the skin is easily movable and a soft tumour-mass, almost fluctuating, can be palpated. The fluctuation, however, is not definite and exploration for pus with a hypodermic needle yields a trace of blood.

" The bulbar conjunctiva is oedematous, but the lower lid seems unaffected. The eye itself is in its normal position, there being no exophthalmos. If the swollen lid is held back by a retractor, the cornea is seen to be normal and vision is also normal.

" Glands: The preauricular glands on the affected side are markedly swollen and tender. The swelling is diffuse and ill-defined, extending into the parotid region. There is no discoloration, redness or fluctuation.

" April 15, 1930.—Operation.—A preliminary diagnosis was made of malignant growth of the lacrymal gland. As it seemed possible to remove the growth and to have enough tissue left to reconstruct the eyelid, operation was decided upon. On the day previous to operation it was noticed that enlargement of the lower lid was beginning.

" A preliminary incision was first made vertically into the substance of the upper lid, in order to define the condition of the tissue there. It was at once evident that no operation other than complete evisceration of the orbit plus parotid gland, etc., would be of any use. As permission could not be obtained for this, a small section was removed for examination and the skin sutured. The conjunctiva was so friable that no suture would hold in it. The whole of the swelling in the lid was found to consist of a soft grey rapidly-growing tumour, which lay right up against the skin of the eyelid and was actually involving the conjunctiva and intimately attached to it. What had appeared to be oedema was actually part of the growth itself. The growth also extended now quite half way round the margin of the lower lid."

Pathological Report:—A section of the tissue removed was carefully preserved in Müller's fluid and sent to the Department of Ophthalmology at Peiping (Peking) where a section was prepared and reported on as follows:—

" May 6, 1930.—*Microscopic Examination:* Sections show a strip of skin tissue, underneath which there are compact masses of cells suggesting a malignant tumour. On account of the poor fixation of the tissue submitted, it is not possible to make any definite diagnosis, the details of the cells being very much blurred due to shrinkage and other destructive changes. A large number of eosinophiles are seen immediately beneath the epidermis.

" *Impression:* A malignant tumour of eye (type?).

Dr. L. SALLMANN/W. P. LING."

FIG. 1.

FIG. 2.

I later submitted the specimen to Dr. R. Howard Moie, Pathologist to Birkenhead and Wirral Children's Hospital, etc., who reports as follows:—

"With regard to section submitted, there is no doubt whatever of its malignancy, and I think the cells are epithelial, of what origin I cannot say. There is abundant evidence of cellular mitosis. There is also some lymphocyte and polymorphonuclear celled infiltration. The tumour is moderately vascular."

Thus, apparently, we would be justified in calling this a case of malignancy of the lacrymal gland, notable for its extremely rapid growth of only 40 days up to the inoperable stage shown in the accompanying two photographs.

A NOTE ON GONIN'S OPERATION FOR DETACHED RETINA

BY

J. HERBERT FISHER

LONDON

WHEN the inflammatory exudate from iritis organizes to form a membranous disc which blocks the pupil aperture the pupil of the eye is said to be "occluded." The obstructing membrane is never so dense as to prevent the filtration through it of aqueous fluid from the posterior to the anterior compartment of the chamber.

Iris bombé results from the formation of an annular posterior synechia, when the pupil is said to be "excluded": in this condition the aqueous secretion, being excluded from the anterior compartment, is retained behind the iris, which becomes bellied forward.

In the light of recent knowledge our former incapacity to deal successfully with a detached retina in which a hole could be recognized appears to have been due to the fact that even if by operative or other measures the subretinal fluid could be drained off it was at once replaced by further fluid which flowed, through the hole, from the vitreous humour. The point essential to secure the very practical success which attends Gonin's operation is said to be the "sealing of the hole" in the retina. The determination of the exact point over the hole at which to puncture the sclerotic and choroid with the cautery is a pre-requisite of success. The term "sealing the hole" suggests that the cautery point is passed through the hole in the retina, sears its margins and thus stimulates the production from the retinal tissue of an inflammatory

exudate which organizes and " occludes " the hole. That this is the real explanation of the success of the operation seems to me most improbable, for the following reasons :—

(*a*) The determination of the exact point on the surface of the sclerotic which overlies the retinal hole, in a variable but in all cases different plane, must be a matter of such extreme difficulty as to be almost impossible ; only an approximation can be achieved.

(*b*) The point of cautery having penetrated the sclerotic at the site selected and traversed the choroid and sub-retinal fluid must be so cooled in transit as to be unable to exert any heat stimulus on the retina, even if it should exactly hit off the retinal hole.

(*c*) The detached retina, an extremely thin epiblastic membrane with a minimum of supporting tissue in its structure, is little likely to produce an inflammatory exudate capable of organizing into a membranous diaphragm for the hole, in response to a thermal or any other stimulus.

(*d*) Even were such a membrane produced it would presumably be no more impervious to fluid than the iritic membrane which occludes a pupil : free communication for the transference of fluid from the intra- to the sub-retinal space would still exist.

There is then in my opinion no apparent reason in this conception of " sealing the hole " for the success which undoubtedly attends Gonin's operation when it is well performed.

The view which I have formed, purely on theoretical grounds, is as follows :—

Formerly cautery puncture to drain off sub-retinal fluid in cases of detachment of retina usually failed to effect a cure because through a rent in the detached portion of the membrane fluid at once flowed from the degenerate vitreous to replace that which had been withdrawn by the puncture. When Gonin's operation succeeds it does so because if the site of puncture has been determined with sufficient accuracy the retina falls back into apposition with the choroid, as the sub-retinal fluid drains out, in such a way that the portion in which the hole exists corresponds with the site of puncture ; the choroid at this point, responding to the stimulus of the cautery, pours out an inflammatory exudate which organizes and firmly attaches the adjacent part of the retina and in doing so forms, as it were, an annular synechia for the retinal hole. Some sub-retinal fluid, no doubt, remains at first, so that the retina is now bombé towards the vitreous ; this residue of sub-retinal fluid will in a short time be carried off by the lymphatic and vascular channels of the choroid, until the whole of the detached portion of the retina is re-apposed : the " ring synechia " prevents it being renewed by fluid from the vitreous : the normal bulk is restored to the vitreous, at the same time, by fluid from the ciliary secreting mechanism now that it can no longer run to waste by draining through the retinal

hole into the sub-retinal space, as it was uninterruptedly doing before the operation was performed.

Gonin's operation, therefore, seems to me to achieve success by "excluding" the hole in the retina, to use the term which we apply to pupillary adhesions, not to "occlusion." In the cured case the position of the retinal hole will correspond with the organized choroidal scar which can be recognized with the ophthalmoscope. It would appear to be necessary to determine as accurately as possible before operating in each case to what part of the choroid the retinal hole will correspond when the sub-retinal fluid flows out, and to puncture with the cautery at this point in the overlying sclerotic; the height of the detachment in the region of the hole will presumably be a factor in determining the spot selected for the puncture; the rather free use of a large cautery would increase the chance of success.

A clear apprehension of the *modus operandi* of Gonin's operation is desirable, and clear thinking may promote further advance in this method of treatment of detachment of retina, which has already achieved so much success. The expression "sealing the hole" seems inappropriate and misleading: "exclusion of the hole" by ring synechia between retina and choroid is perhaps the phrase which will best convey the state of affairs to the ophthalmic surgeon; in using the term he will not conceive of the annular attachment as merely linear at the extreme margins of the hole; a broader area of the circumference is no doubt adherent to the choroidal scar; the surgeon will not need to be reminded that in the presence of the detachment the direction of the current of fluid is from the intra-ocular to the sub-retinal space.

AN EPIDEMIC OF CONJUNCTIVITIS DUE TO INFECTION WITH BACILLUS FAECALIS ALKALIGENES

BY

R. H. BALFOUR BARROW

LONDON

MY inability to find any record of this organism as a cause of epidemic conjunctivitis leads me to report this outbreak. The epidemic occurred recently in the training ship "Exmouth" which is a training ship for boys for the Royal Navy and the Merchant Service. The ship, which is under the control of the London County Council, lies at anchor in the Thames off the north bank of the river about 20 miles from London. She is built

for a complement of 700 boys but at the time of the outbreak there were only 460 on board. The ages of the boys vary from 11 to 16 years. The water supply to the ship is by pipe from the main town supply.

On September 6, one boy reported sick with " sore eyes " to the sick berth steward who treated the case with a simple boric wash. On September 9, I visited the ship and found nine boys were similarly affected. The appearance of these cases was a general hyperaemia of both bulbar and palpebral conjunctiva with follicles present in the upper fornix along the upper tarsal margin. In all cases except one the lower fornix was free from follicles. No case had follicles on the bulbar conjunctiva. There was a good deal of photophobia and lacrymation, and a small amount of muco-purulent discharge. The condition of these cases can best be described as very similar to the early stage of trachoma.

On questioning the original case he told me that he had only recently joined the ship, and also that two years previously he had had trachoma. This was borne out by the scarring of the upper lids. In view of this history and the suspicious appearance of the nine cases I decided to treat them as early trachoma pending further investigation. They were isolated forthwith and the rest of the ship's company inspected, but careful examination failed to reveal further cases. The following day an inspection produced eight cases, the next day a similar procedure produced 20 cases. A daily inspection was thenceforth the rule and an increasing number were found to be infected. The rapid spread of the infection negatived the suspicion of trachoma but as a precaution the old trachoma case was removed from the ship.

With a view to ascertaining the organism present, swabs of the conjunctival sac were sent to the laboratory for examination. The reports read as follows:—

1. " The Gram-negative bacilli which grew in the cultures are all of the same type of organism and belong to the coliform group. We have not yet been able to classify the organism by culture and fermentation tests, but we are carrying out further tests with regard to its pathogenicity for rabbits."

2. " The coliform organisms isolated from the conjunctival swabs cause no reaction when instilled into the conjunctival sacs of rabbits or guinea-pigs. It has not yet been possible to classify further the organisms except to prove that they are not Koch-Weeks' bacillus, Morax-Axenfeld bacillus, or B. pneumoniae (Friedlander).

3. " Cultures of the Gram-negative bacillus conform in their growth, characteristics and fermentation reactions to those of bacillus faecalis alkaligenes."

A word now about the causative organism. The bacillus faecalis

alkaligenes is a Gram-negative motile bacillus, unable to ferment any carbohydrate, producing a strong alkaline reaction in litmus milk, and a brownish growth on potato; is frequently found in the intestinal canal, and very occasionally infects its host. It usually has the significance of a simple saprophyte but some observers state that it may cause an infection in man.

Morphology.—The size and shape of the organism varies a little according to the conditions under which it is grown but usually it may be described as a short rod, 0·5 by 1 to 2μ, occurring singly or in pairs, occasionally in long chains, and provided with peritrichous flagella.

Cultural characters.—Closely resemble B. typhosus in growth. Flourishes on similar media.

Biochemical reactions.—No fermentation of carbohydrate, no proteolytic ferment is formed, and no digestion of serum or gelatine, although growth is accompanied by alkali formation.

Serological reactions.—In blood serum of man in whose intestine the bacillus may be present in large numbers no agglutinins seem to be developed.

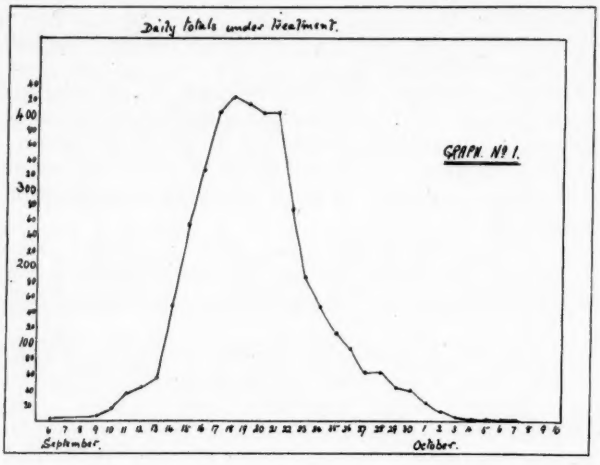
Pathogenicity.—Petruschky was able to infect laboratory animals by intraperitoneal but not by subcutaneous inoculation. Evidence of the organism being pathogenic to man and animals is rare.

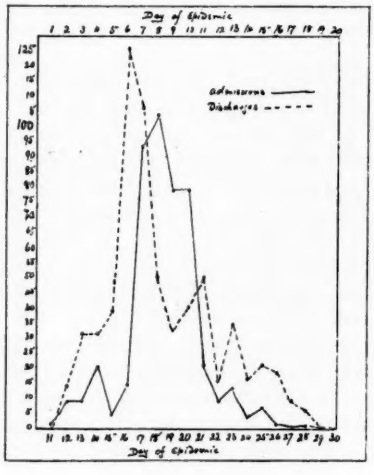
Distribution in Nature.—Petruschky found it originally in spoiled beer, and it has been found frequently in water. The bacillus is probably widely distributed and is a mere saprophyte. In the human intestine under normal conditions it probably occurs only in small numbers. Trawinski and Gyorgy (1918) found it in 19 per cent. of normal stools, but on the other hand found it in 71 per cent. of the stools of those suffering with a catarrhal condition of the bowels.

As soon as it was realized that all the boys on the ship were likely to be infected a request was sent to the L.C.C. for extra help and a staff of six nurses was sent down. All school and instructional classes were stopped and the ship placed in quarantine. Every infected case was treated three times a day by washing out the conjunctival sac, and, after the final wash for the day, the lids were smeared with ung. hydrarg. ox. flav. (B.P.) The solutions used for irrigation were lotio ac. boric.; lot. ac. boric. c̄ zn. sulph. (Roy. Lond. Ophthal. Hosp.) and lot. hydrarg. perchlor. 1/10,000. The zinc solution caused a good deal of irritation and after a few days was discontinued. Of the two remaining solutions a careful watch was kept to ascertain whether one was more suitable than the other, but the cases seemed to clear up equally quickly. I have since come to the conclusion that the washing out of the conjunctival sac is the essential, and that probably normal saline

would have been equally efficacious. The average duration for the treatment of each boy was ten days. All washing both of the person and utensils was carried out with running water. The source of the infection was never traced.

Two graphs are attached. No. 1 shows the rapid infection of the ship's company and the equally rapid recovery. No. 2 shows the daily number of admissions from the first day, with, superimposed, the daily number of discharges from the eleventh day. It will be noticed how nearly these two coincide, admissions reaching their





peak on the seventh and eighth days while discharges reached their peak on the sixteenth and seventeenth days.

Lastly, acknowledgments are made to Dr. V. D. Allison for the bacteriological examinations and reports, and to Dr. T. H. Whittington, Consulting Oculist to the L.C.C., who visited the "Exmouth" during the epidemic and approved of what was being done.

GLAUCOMA AND LOW TENSION DISC CUP ENLARGEMENTS

BY

RANSOM PICKARD

EXETER

AT the present time some interest is being taken in cases which present all the symptoms of glaucoma except that of increased tension. In April, 1930, I read a paper (*a*) dealing with this group of cases, showing that, as far as the tests employed were concerned, there was no difference from glaucoma except that of tension. Prof. F. H. Newman, D.Sc., Professor of Physics in the University College of the South-West, afterwards kindly examined the paper and the charts on which it was founded. He agreed that on the facts as presented to him the deductions were correct. He suggested that a plot of the tension against the size of the optic disc cup be made and that the elasticity of the cup should be investigated. The present paper embodies these results, an enquiry into the origin of the low tension cases, compares the clinical course of the two conditions, and discusses the name to be applied to the condition when it occurs with no rise of intra-ocular tension.

The cubic capacity was calculated upon the basis that the transverse diameter of the disc is 1·5 mm., the vertical 1·6 mm. and that a depth of − 3 D. equals 1 mm.; the drawings of the discs made in my notes supplying the remaining details. It should be noted that, because of some details being absent, some cases used in the paper (*a*) had to be rejected, while as many of the cases shown in it as " too advanced for use in charts " as possible were added, as the present paper does not deal with the fields of vision, and they are necessary for a more complete comparison of the clinical course.

	No. of eyes from paper (*a*).		No. of advanced eyes added.		Total.
Glaucoma ...	32		12	=	44
Low tension ...	35		2	=	37

In Charts I and II the contents above 2·20 c.mm. are shown in figures, not in true ordinate position, because of space. The tension is correctly shown in these large cups.

Tension and cubic contents of cup.—It is to be noticed in the low tension cases that 26 out of 37 have T. 20 or less; that is, the tension is generally rather low than near the border line (27 mm. Hg), the mean for the whole group being 18·25; corresponding

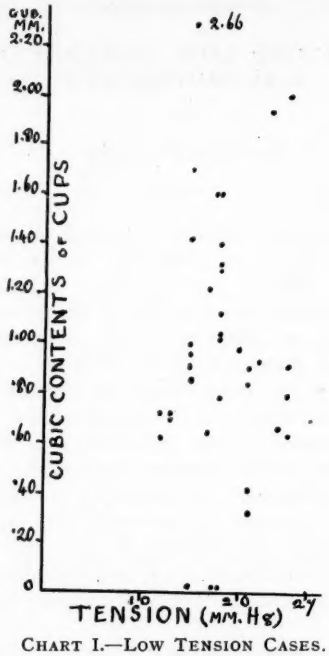


CHART I.—LOW TENSION CASES.

with, on the Schiötz scale, a weight of 5·5 grms. and a deviation of 5°. Out of 15 cases having a cup of 1 c.mm., or upwards, 13 have a tension of 18 mm. Hg or lower; *i.e.*, the larger cups have a lower tension.

Thus it will be seen that this chart negatives the opinion that intra-ocular pressure is any active factor in the enlargement of the cup; if this had been so, the larger cups would have had a pressure approaching the higher limits of normality; this is not the case.

As compared with the glaucoma chart, it will be seen that there are few cases with small cups. Although all cases start from a normal condition, in practice it is an enlarged cup which leads to an

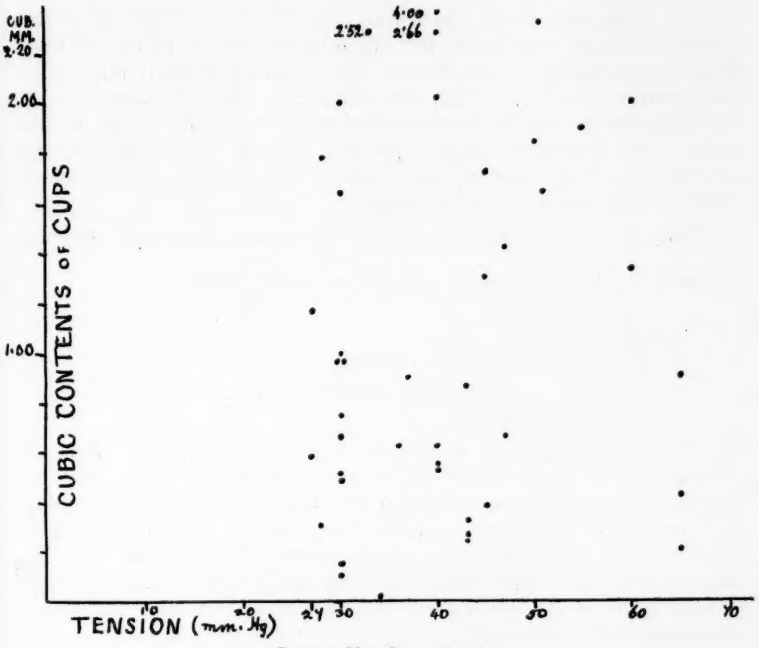


CHART II.—GLAUCOMA.

investigation; only in the event of one large cup and the systematic examination of both fields, is an early case with small cup likely to be detected. In point of fact most patients had both disc cups enlarged when first seen. ((*a*). 17 out of 21 patients). A third point is that the cup sizes are mostly grouped between 0·50 c.c. and 1·5 c.c.; it is exceptional for the cups to be excessively large.

Of the glaucoma cases 14 out of 43 have a tension between 27 mm. and 30mm. Hg, their cup sizes showing a wide distribution. The remaining 29 cases are sparsely scattered over a wide range up to 65 mm. Hg. Of the 15 cases with a tension of 45 or upwards, 10 have a cubic capacity of over 1 c.mm.

The cases may be classified thus according to cup sizes:—

	Glaucoma cases.	Low tension cases.
Cubic contents over 1·5 c.mm. ...	15	6
Between 1·0 and 1·5 mm.	4	9
Below 1·0 mm.	24	22
Total	43	37

The glaucoma cases chart may be taken as illustrating the general clinical experience that much effect may be produced by a slight but constant rise in tension, though the extremely large cups are mostly caused by a high rise of tension. But the size of a cup and the tension will depend upon the stage at which the case is first seen. The group of large cups is a graphic illustration of the clinical experience that so many cases of glaucoma first seek advice with one eye in an advanced stage.

Elasticity of cup surface.—Prof. Newman suggested that the formula $S\left(\frac{1}{r^1}+\frac{1}{r^2}\right) = t$ should be used, where

s = surface tension.

r^1 = radius of cup in depth in mm.

r^2 = ,, ,, ,, ,, horizontal diameter in mm.

t = intra-ocular tension,

the formula being used as if it were true for elasticity. Error is introduced by the bottoms of the cups not being perfect curves; but as the two groups are alike in this, it is assumed that the errors will not spoil the comparison of the groups. The figures given for elasticity are not absolute measurements of force; but these are not necessary for the comparison, as the figures in both groups would have to be multiplied by the same constants to obtain absolute measurements.

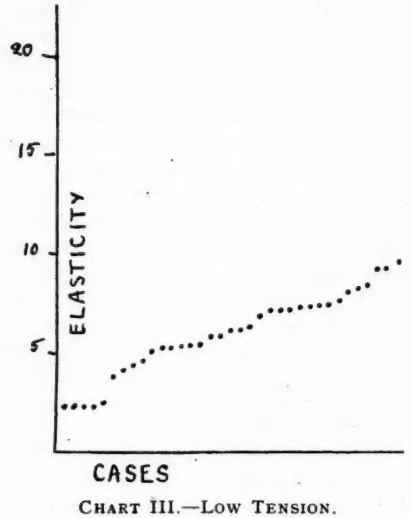


CHART III.—LOW TENSION.

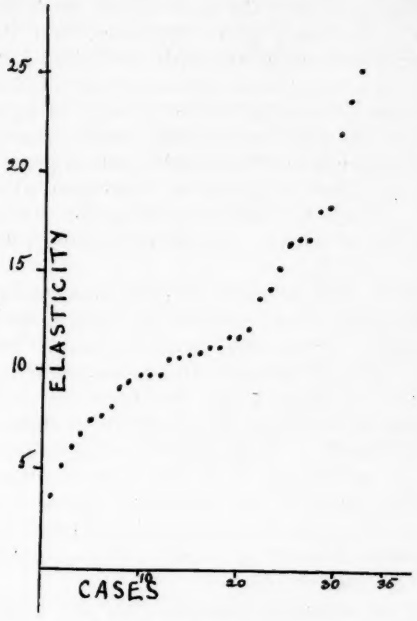


CHART IV.—GLAUCOMA.

The obvious feature in the graphs thus made is the much higher elasticity in the glaucoma group. The averages for the groups are:—

Glaucoma 12·41

Low Tension 5·84

Using general terms, the elasticity in the glaucoma group is rather more than double that of the low tension group.

These charts point out that there is a great variation in the resistance of the nerve head in otherwise apparently normal nerves, so that more or less equal tensions may produce very different results in different eyes. But III and IV show such differences in elasticity as can only be explained by very different conditions in the tissues of the nerve heads of the two groups. All the 35 eyes of the low tension group give a figure under 10, of the 32 glaucoma cases in the Chart IV only 12 eyes are under 10.

It has been suggested that the group of low tension cases may be accounted for by the supposition that they normally start with a tension much below the average and to which the eyeball is adapted and that upon these conditions supervene one or other of the causes of rise of tension. It is argued that the resultant

increased tension will have the same effect upon the optic disc in such cases as in ordinary glaucoma; *i.e.*, that the low tension group is a glaucomatous group with the initial balance of forces set, as it were, on a lower scale, into which as a disturbing element comes an increase of tension which, though bringing the total to less than 27 mm. Hg (Schiötz) is sufficient to cause glaucoma.

There are three conditions assumed in this argument, all of which have to occur together, a group of eyes with (i) tensions much lower than the average (ii) optic discs of weaker resistance than the average (iii) a rise of tension enough to produce glaucoma but not reaching to 27 mm. Hg.

If the glaucoma and intermittent glaucoma groups in the paper of April, 1930 (*a*) be taken together, the total is 36 individuals, as contrasted with 21 for the low tension group. Seeing that this represents the result of consecutive investigation upon over 4,000 private patients, the figures may be taken as representing to a moderate degree of accuracy the incidence of these two groups in the south-west district of England, ethnologically mostly Anglo-Saxon with an admixture of Celtic and Norman strains; the proportion being roughly two glaucomas to one low tension case.

Cridland (ref. *d*.) states that in a group of 1,001 normal cases the tension was under 15 in 1·7 per cent., which would give 68 of such cases in 4,000 people, or 136 eyes.

If it be for the moment assumed that the glaucoma and low tension cases are all due to an increase of tension, then the incidence of pathological increase is, 36 + 21 (=57) per 4,000 cases, 1·42 per cent. As there is no evidence that low tension eyes are more liable to increases of tension than those of average tension, we are entitled to assume that they will have an average liability to an increase. Thus, the 136 eyes of tension under 15 mm. Hg would have a liability to a pathological increase of tension in 1·42 per cent. of eyes, equal to two eyes in the group of 4,000 people; whereas 21 cases, comprising 38 affected eyes, were found (Chart I), in which four eyes were under 15 mm. and eight had a tension of 15 mm.

SUMMARY OF ARGUMENT

Normal tension under 15 mm. Hg
at 1·7 per cent. in 4,000 cases = 136 eyes (68 cases).

Total No. of cases in paper (*a*)
36 + 21 ... ... = 57 = 1·42 per cent. of 4,000.

1·42 per cent. of 136 ... = 2 eyes.

Actual No. of eyes affected yet
having low tension ... = 38 (21 cases),

If this calculation be accepted, it will be obvious that an increase of a previously low tension cannot account for the number of cases found, even on the widest allowances for variations in different series of cases.

It will be seen that no account has been taken of the variability in the normal resistance of the optic disc in this statistical argument. That this exists is a matter of every-day experience. Chart II may be taken as a graphic illustration of its effect in glaucoma on the size of the cups under similar tensions. It introduces another variable into the calculation, which would act both in the low tension cases as well as in glaucoma; but since the former only comprise 1·7 per cent. (*d*), even if all these had discs of low resistance the figures just given would not be affected; whereas, if less than 100 per cent. have weak optic discs, this would decrease the number which give way under an increased but low tension.

These considerations may be looked at from another point of view. Do the tensions (Chart I) of the low tension group represent an average normal group? The following is an analysis of them:—

		Percentage.	Cridland (*d*).
No. under 15 mm.	4	10·8	1·7
No. at 15 mm.	8	21·6	
Average for whole group ...	18·25		20·5

If the tensions as a whole were raised, the average would be raised; it is slightly below Cridland's figures, a difference such as might be expected in two different series of cases. The low tension cases are an average group, with no suggestion that they are raised within the normal limit.

This aspect may be thus summed up. The view that the cases of low tension start from a lower level involves three coincidences, a low tension, weak disc head, and an increase of tension in the same case. The alternative explanation, that there is a pathological condition of the nerve head leading to contraction, requires this one assumption and no coincidence at all.

The modus operandi.—The bearing of the graphs, in conjunction with those of my previous paper (*a*) upon the causation of the low tension group has now to be considered.

(i) The evidence is against intra-ocular tension being the cause of the cup recession.

(ii) The lower elasticity in this group suggests an actual decrease in the resistance of the nerve head.

(iii) The group of small cup cases, found in the routine examination of the companion eyes, shows that changes have occurred in these optic discs before any cup alterations have occurred. This

is further confirmed by a case described by me in a paper (*b*. Case E) on a group of low tension cases in which a companion eye, healthy to inspection, showed a much enlarged blind spot.

The right disc in this case is now 100 per cent. and 3 D. deep with an unchanged field (April, 1931.)

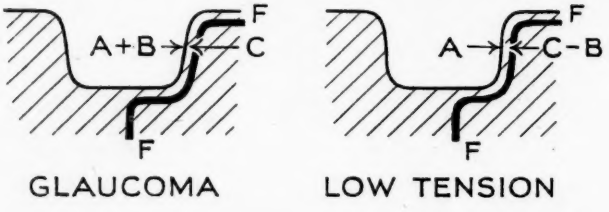
(iv) Any alteration in the position of a limiting surface fixed at its periphery can only occur as the result of a disturbance of the forces acting upon either side. In the case of the optic disc cup, the cup will enlarge by pressure exerted through the vitreous or by traction by the nerve head tissues; the former has been shown not to be increased, therefore the enlargement is caused by contraction of the nerve tissues.

The conclusion arrived at is that the primary cause is in the nerve head itself, and is not an effect inflicted upon it from without, as in the case in glaucoma. It apparently sometimes causes diminution of the 1/1000 white field and enlargement of the blind spot before the cup is enlarged. Later, the primary cause leads to recession of the nerve head and enlargement of the disc cup, with consequent effects on the nerve bundles.

The next question is how the cup enlargement acts upon the nerve fibres, causing field contractions like those in glaucoma.

In glaucoma there are two possibilities, longitudinal lengthening of the fibres by the enlargement of the disc cup; and lateral pressure on them through the vitreous, the tissues of the nerve head acting as a counterpressure. The longitudinal lengthening caused by the enlarged cup would act equally in the low tension group, but not the lateral pressure.

CUP SECTIONS



GLAUCOMA LOW TENSION

In the two diagrams FF = a nerve bundle in the nerve head.

A = Normal tension of the eye.

B = Increase of tension in glaucoma or retraction in the low tension group.

C = Counterbalancing external tension (*i.e.*, in nerve head.)

(1) Normally B is absent and A and C are in equilibrium.

(2) In glaucoma B has both a longitudinal and transverse action on the nerve head fibres; a stretching and a crushing action.

(3) In the low tension group the counterpressure C is lowered by B, so that A cannot exert the lateral pressure as in glaucoma, for though it exceeds C—B by the amount B, it has a lowered resistance against which to compress the nerve bundle FF.

If this reasoning is correct, the effect of the cup on the nerve fibres, as far as the enlargement is concerned, is limited to changes caused by the longitudinal tension on the fibres. It must be noted that this does not invalidate the possibility of effects on the nerve fibres produced by the original cause of the recession, to which reference has already been made, and which effects would continue as long as contraction of the tissues of the nerve head continues.

The clinical course.—In chronic non-intermittent glaucoma it may fairly be stated that blindness is the final inevitable result if the patient lives long enough, a rule with very few exceptions. On *a priori* grounds it may be surmised that this might not be so in the low tension group. If the recession be considered as due to a contraction of the nerve head tissues, it will be seen that the amount of this might vary, giving rise to different degrees in the final size of the cup and of effect upon central vision and field. The following are reasons for thinking this is so.

(i) In the paper (*a*) while out of 21 patients in the low tension group 4 had one eye too advanced to be used in constructing the charts, out of 36 patients in the glaucoma and intermittent glaucoma groups 21 had one eye too advanced for use in the chart. In groups of these small numbers minor differences would not be more than would be expected, but a disproportion such as this is significant; it is a fair deduction that in the group of low tension cases the affection tends to stop short of severe loss of the visual field.

	Glaucoma.	Low tension.
Total affected eyes ...	67	40
Analysis of severe cases:		
Blind	5	0
V 1/60	5	1
Fields very small ...	11	3
	21 (31·7 per cent.)	4 (10 per cent.)

This general conclusion agrees with other severe cases of low T., not detailed in (*a*) or (*b*).

(ii) Some cases detailed in (*a*) apparently have become arrested. In (*b*) Case H had been watched for 19 years and kept good sight till her death in 1930.

(iii) On the other hand, a case seen in 1922, not included in (*a*) because of doubtful diagnosis, is now obviously such an one, and has made steady progress, so that now the 3/1000 field is 12° around the fixation point, while the other eye now shows an enlarged cup. But one case failed very quickly in a year, the field in the better eye being down to 5°.

(iv) The more carefully a routine examination is made in adults of all cups which are larger and deeper than usual, the larger the number of cases in which the early sign of diminution of the 1/1000 field is found. (Of course, cases that are likely to have this diminished by other causes, such as retinal atheroma (*c*) or lens haze must be excluded). This, coupled with the fact that severe cases are uncommon, again suggests that many of these slighter cases do not progress far.

It is obvious that the conclusions as to the course of these cases are tentative, except that really severe cases are uncommon; for that strong presumption exists.

Name.—Confusion is arising in nomenclature because of the similarity in the end results in glaucoma and these cases of recession of the nerve head with low tension. I would suggest that " glaucoma " be reserved as formerly for cases of increased tension and the sequelae of the increased tension, independently of whether the tension is due to errors in the amount or composition of the fluid passing into the vitreous, to vascular engorgement, or to hindrances to the removal of the fluid from the eye. For not only are the causes of the phenomena different in increased tension, but the increased tension demands a therapy directed to it, a further reason for not altering the meaning of the word " glaucoma."

Next arises the question of by what name the recession of the nerve head in low tension should be known. By some it is called " glaucoma without pressure "; but with a different causation this surely is incorrect. In a paper (*b*) I used the name " cavernous atrophy," borrowing the term from Schnabel's account of certain changes in the nerve head; but this has not caught on, probably because it assumed a pathology for which no proof was produced in the paper referred to.

It should be pointed out the condition called " cavernous atrophy " by Schnabel would fit these cases of recessed cups excellently, whereas it is difficult to see how it can arise in cases of increased tension. The rarefaction of the nerve head tissues followed by contraction, as described by him, would be just the condition which would account for all the symptoms in these low tension cases; both early, before there is any cup enlargement, and later, when contraction has caused the cup to increase. On the other hand, it is difficult to see how an increase of pressure in the eye can cause a rarefaction in the nerve head, or can do anything

but damage to the tissues by pressure and, nearly always, cause enlargement of the cup. The rarefaction could only exist for the pathologist to find if the pressure were not raised. But from the similarity in the cups and visual effects to glaucoma, may not Schnabel have confused the low tension group with the glaucoma group, and really have described the former?

Although " pseudoglaucoma " has been used for certain congenital conditions of the disc cup, yet it would appear to be for the time being a good name to appropriate to this group of enlarged cups in adults without a rise in the intra-ocular tension; pending an investigation in its pathology, which would probably provide a better. This name suggests its similarities to glaucoma, but distinguishes it from that group of symptoms.

In conclusion I wish to thank Prof. Newman for his help and advice in the compilation of this paper.

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A NEW PORTABLE CORNEAL MICROSCOPE

BY

C. J. LONGWORTH BLAIR

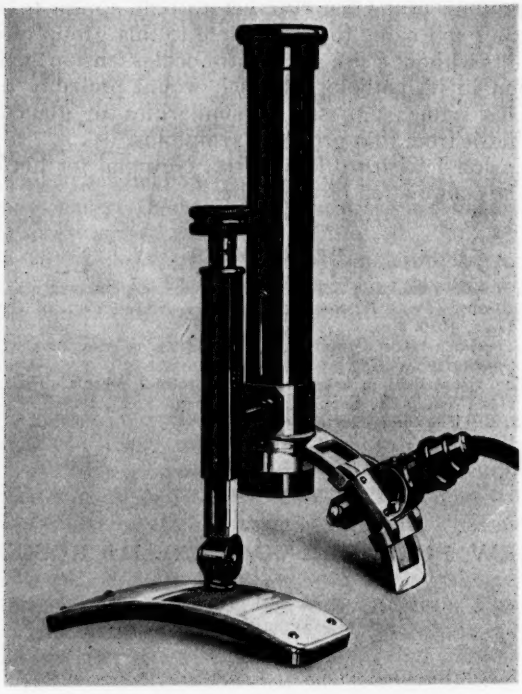
LONDON

IN the diagnosis of certain ophthalmological conditions the necessity for instruments giving high magnification and appropriate lighting has been demonstrated by the popularity of the binocular corneal microscope used in conjunction with some form of slit-lamp. This involves large apparatus which must be fixed. The instrument here described is designed to give a reasonable amount of magnification combined with sufficient illumination in a portable form. The instrument for the purpose of description may be divided into:—

a. The microscope and stand. *b*. The source of illumination. The microscope consists of a small optical unit capable of magnification of × 10 to × 20 inclusive, mounted on a stand for application

to the patient's forehead and with screw adjustment. The stand itself is capable of being adjusted to meet the discrepancies in slope of various foreheads.

The source of illumination consists of a lamp and its mounting. The lamp is a small luminous ophthalmoscope bulb with a single filament in a small cylindrical case with a condensing lens which



is capable of adjustment. There are two stops provided, one of which gives a sharp line, being the focus of the filament, and the other gives an even disc. The sharp line is the more important and is called " the focus of the lamp " in the remainder of this description.

The lamp is mounted on a slide travelling upon a quadrant of such a design as to combine ease of movement along the quadrant with rigidity in other directions.

The quadrant is mounted on the objective end of the microscope in such a way that it may be swung through 180° about the axis of the microscope.

The lamp itself has two movements, one a rotation about its own axis. By this means the line of light called " the focus of the lamp " may be adjusted to be horizontal or vertical to the line of incidence. The other movement is a rotation in the plane of the quadrant, and by this means the angle of incidence of the light may be varied. There is a mark which indicates the position of the lamp, which will bring the " focus of the lamp " and the focus of the microscope, when adjusted for a magnification of 10, on to the same point.

The current needed to light the bulb is obtained from a small dry battery which can be carried in the pocket.

As to use

Assuming the right eye is to be examined. The most convenient position for the patient is lying on a couch in a horizontal plane, the observer standing behind the head.

The stand is then placed on the patient's forehead with the light sharply focussed on the object to be viewed. Coarse adjustments can be made by moving the stand or flexing the joint. As the focus of the microscope coincides with that of the light, the object is brought immediately into view. The whole instrument is then steadied by the observer with the palm of the left hand leaving the fingers free to control the lids of the patient. Finer adjustments may then be made with the right hand by means of the screw.

The right hand is then left free, either further to steady the instrument or for such manipulation as removing a foreign body, etc. Variations in the obliquity of the beam of light may also be made by sliding the lamp on the quadrant.

For the left eye swing the quadrant through 180° and hold stand with right hand leaving left free.

This instrument is suggested for use as an aid to diagnosis where the ordinary loupe is not sufficient and a slit-lamp is not available, to determine depth of foreign bodies in a cornea and to remove minute foreign bodies where skilled assistance in holding and focussing a lamp is not available.

It is also hoped that this instrument will assist surgeons who are unable to use a binocular microscope or loupe through lack of balance in their extra-ocular muscles.

COUNCIL OF BRITISH OPHTHALMOLOGISTS

Annual Report

THE Council presents its report for the year 1930-31. At the first meeting the following were elected as officers:—President, Mr. J. Herbert Fisher; Vice-Presidents, Sir J. Herbert Parsons, Mr. A. L. Whitehead; Hon. Treasurer, Mr. M. S. Mayou; Hon. Secretary, Mr. R. Affleck Greeves. The following were appointed to serve on the Executive Committee:—The President and Secretary, (*ex officiis*) with Sir J. Herbert Parsons, Mr. Treacher Collins, Mr. Mayou, Mr. Goulden, Mr. Williamson-Noble and Mr. Juler.

Report on Refraction Hospitals.—On the recommendation of the Executive Committee a letter was drawn up embodying the conclusions of the report, and a copy of this letter was sent to the Ministry of Health and to the local authorities in those districts where Refraction Hospitals have been instituted.

Ophthalmic Benefit.—The representatives of the Council of British Ophthalmologists have continued to attend the meetings of the Ophthalmic Committee of the British Medical Association, and the chairman of the Council of British Ophthalmologists is acting as corresponding member of the Joint Committee of the London Ophthalmic Hospitals. By these means the Council has kept in touch with both these bodies which are working for the better provision of Ophthalmic Benefit.

Traffic Signals for Motorists.—A letter suggesting the desirability of introducing such modifications of the illuminated colour signals now in common use as would eliminate the possibility of mistakes on the part of colour blind persons has been sent to the Public Press, the Home Office, the Ministry of Transport, the District Traffic Commissioners, the Automobile Association, and the Royal Automobile Club.

Certification of the Blind.—A Committee has been appointed to enquire into the various methods now in vogue of certification of blind persons, with a view to the establishment, if possible, of a uniform system which would include the classification of causes of blindness under specified headings, and so in time furnish valuable statistical information. This Committee is now at work.

The Council desires to put on record a sympathetic expression of the loss it has sustained by the death of one of its Vice-Presidents, Mr. A. L. Whitehead.

The Council desires to thank the Council of the Royal Society of Medicine for the use of rooms for meetings, and the National Committee for the Prevention of Blindness (U.S.A.) for continuing to send copies of its publications.

As in former years, the expenses of the Council have been defrayed by contributions from its members.

ANNUAL CONGRESS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM

THE Annual Congress of the Ophthalmological Society of the United Kingdom was held at the Anatomical Department of University College, London (by kind permission of the Governing Body of University College and Professor Elliot Smith) on April 23, 24, and 25. Mr. Leslie Paton, the President, was in the Chair.

The President delivered an address of welcome. He spoke of the death of two distinguished honorary members during the last year, Professor Gullstrand, of slit-lamp fame, and Hofrat Professor Ernst Fuchs. It was impossible to express the high esteem which was held of Professor Fuchs. The President referred to the appreciative account of Fuchs' life and work which was written by Mr. Treacher Collins in the *British Journal of Ophthalmology*. Fuchs' contributions to scientific knowledge had hitherto been unequalled.

MR. FOSTER MOORE read a paper on "Non-luetic Argyll Robertson Pupils." He gave an account of 15 cases, 12 of which were females. The onset was not accurately known, some of the patients seeking advice for cosmetic reasons. There was no fundus abnormality and the visual acuity was unaffected. In 13 patients one pupil only was involved and in 12 this was in the left eye. The pupil was semi-dilated, inactive to light, and on convergence there was a slow contraction lasting about 25 seconds and a slow relaxation. The ciliary muscle was not involved and there was no failure of the pupil to dilate fully. With eserine the pupils contracted quite fully. There was no evidence of syphilis and the Wassermann reaction was negative. Other constitutional disease was absent.

Dr. Gordon Holmes, Mr. Herbert Fisher, Dr. Ballantyne, Colonel A. E. J. Lister, and Dr. Dorrell discussed the paper.

DR. GORDON HOLMES read a paper entitled "Iridoplegia associated with other nervous symptoms." His investigations had been made on 54 cases excluding those due to syphilis, encephalitis lethargica, diphtheria, botulism, and drugs such as atropine. There was no ordinary recognizable cause for the paralysis. The tendon reflexes were either absent or diminished.

The age incidence was from 10 to 40 years. The onset was sudden, and the condition in some cases remained stationary for seven years, in others it was progressive. The majority of cases were unilateral, but some of these had the second eye affected at a later date.

The pupil of the affected eye was moderately dilated, irregular in outline, inactive to light, and showed slight reaction on convergence. The reaction on convergence was of a tonic character; contraction was slow, lasting about 52 seconds, and when complete was equal to the contraction of the other eye; relaxation was also slow and took about 90 seconds.

The reactions to other stimuli were normal, except in one patient, who, when she became emotionally excited, the affected pupil became pin point. The reaction to eserine was normal. In some patients the accommodation was defective and slow. The knee jerks, ankle jerks, and arm jerks were absent. Examination of the blood and cerebro-spinal fluid revealed no evidence of syphilis.

It is assumed that the site of the lesion is nuclear. Dr. Gordon Holmes discussed the possibility of a muscle lesion such as a myotonic condition. He quoted Cords' case where a gunshot wound involved the ciliary ganglion, and he mentioned the association of tetany with this condition.

In the discussion that followed this paper DR. GIRI described a patient who was 30 years of age. One pupil was inactive to light and there was slight reaction to convergence. The visual fields were contracted to about 30°. Neurological examination failed to reveal anything positive, and there was a hysterical element present.

Mr. Herbert Fisher described a case of two boys who were twins. One had unilateral iridoplegia and the other bilateral. At one stage there was also present cycloplegia in one of the boys. There was no evidence of syphilis.

DR. BALLANTYNE asked if a neurologist could distinguish between myotonic and neurotonic manifestations.

Colonel Lister and Dr. Dorrell also took part in the discussion.

MR. HERBERT FISHER read a "Report of two cases of nystagmus." The first was less than a year old and the seventh child in the family. It was injured by a blow behind the right ear and two weeks later developed jerking movements of the right eye. The pupils were active, the media, fundi, and optic discs normal.

The second case was eight months old and a congenital syphilitic. Deviation of the eyes to the right preceded the nystagmus. It was assumed that there was an irritative lesion either in the left cerebral cortex or in the right half of the mid-brain.

MR. E. WOLFF read a paper on "A contribution to the pathology of papilloedema." He described the experimental work he had done on dogs. The conclusions he made were (1) Non-diffusible dyes injected into the cranial sub-arachnoid space, at pressures which are compatible with life, do not enter the optic nerve. (2) Claims to have produced papilloedema by injecting fluids into the subarachnoid space at pressures compatible with life were not upheld by this study. Structural reasons were advanced for the special site of the beginning of papilloedema in human beings, and for the extent of the distribution of the oedematous fluid associated with papilloedema.

Mr. Wolff also read an interesting paper on " Bilateral microphthalmos."

MR. A. W. ORMOND described " A case of Osteitis deformans with Ocular Symptoms." In the left eye the pathological changes involved the macula. There were a choroidal haemorrhage, pigmentary disturbances, and an atrophic area. In the right eye there was a large mass of organizing tissue at the macula, also a scattered patch of old haemorrhagic pigment. The choroidal vessels were sclerosed and tortuous and the retinal arteries small and attenuated. Mr. Ormond discussed some of the theories about the aetiology of this disease.

An afternoon session was set apart for a discussion on " Affections of the eye due to virus."

DR. J. R. PERDRAU opened the discussion. He said that the terms " ultramicroscopic " and " filtrable " were not applicable to viruses as known to-day. He described the chief characteristics of viruses, and compared them with those of visible bacteria.

Inclusion bodies in one or more organs or tissues are present in certain virus diseases; some, such as the Negri bodies of rabies, are highly characteristic and important for diagnostic purposes. An important negative character of viruses was that, up till now, it had been impossible to cultivate them on lifeless media. There was often a close association between viruses and the cells of the tissue or organ in which they multiplied in the living animal. This was of importance in regard to problems of infection and immunity in their broadest sense.

Dr. Perdrau described in detail the study of the viruses of of vaccinia and herpes, also species specificity and tissue specificity in relation to immunity.

MR. F. T. RIDLEY described certain eye diseases which are believed to be due to viruses. The virus of vaccinia inoculated into a rabbit's cornea caused a lesion similar to a vaccinial pustule in the skin. In herpes febrilis keratitis the lesion started as a localized opacity in the substantia propria, this might spread and affect the whole cornea. Perdrau's virus, obtained from the lungs of patients dying of pneumonia, produced a very severe keratitis. Mr. Ridley also spoke about dendritic ulcer

MR. F. A. WILLIAMSON-NOBLE paid a tribute to the work of Dr. Perdrau. He described Campbell and Head's account of the pathology of herpes zoster and the histological changes in the Gasserian ganglion. An important factor is the resistance of the patient and the local resistance of the affected part. The treatment was mainly symptomatic, but Friedenwald had reported the result of treating such a case with convalescent serum. Mr. Williamson-Noble was of opinion that sympathetic ophthalmitis may be due to virus infection, which passes from one eye to the other by means

of the optic nerve sheaths and chiasma. If this is true then it is important that the optic nerve should be divided as far back as possible when excising the exciting eye.

MR. L. H. SAVIN described two cases in which he believed a virus was responsible for the activation of other organisms. One was a case of cavernous sinus thrombosis which followed nine days after vaccination against smallpox in a rheumatic patient. The patient died on the fifth day of the illness and streptococci were found in the pus at the base of the brain. The other was a case of smallpox suffering from a left corneal ulcer.

MR. HUMPHREY NEAME spoke about distemper keratitis in dogs, and pointed out how this closely resembled syphilitic keratitis in human beings. He demonstrated microphotographs of corneal nebulae, vascularization, corneal infiltration with leucocytes, and associated iridocyclitis.

Sir John Parsons, Sir Richard Cruise, Mr. Treacher Collins, Mr. Leslie Paton, Mr. Mayou, Mr. Whiting, Colonel A. E. J. Lister, Mr. Wolff and Dr. Giri took part in the discussion that followed.

MR. ALEXANDER MACRAE read a paper on " A case of a hole at the Macula." He described the history and physical signs of the patient and showed fundus paintings taken at certain intervals of time since the injury. He considered that the case was of unusual interest on account of the rarity of this condition.

Friday, April 24.

MR. J. H. DOGGART read a paper on " Epithelial Dystrophy of the Cornea." He reviewed the literature and described the clinical features and slit-lamp appearances of the cornea in these cases. Histological examination showed that no inflammatory cells were present. Treatment consisted in the application of heat, massage, and dionine. Subconjunctival injections had been tried, and also the administration of glycerophosphates and organo-therapeutic agents.

MISS IDA MANN read a very interesting paper on " The Development of the Cornea." The paper was well-illustrated by drawings of serial sections of the eyes of rodent and mammalian embryos. Miss Mann described the part played by the three germ layers in the formation of the cornea, the development of a cleft and " directional membrane," and the rôle of the meso-stroma. It is necessary to read the original paper in order to gain the full value of this interesting contribution to the knowledge of embryology.

AIR VICE-MARSHAL SIR DAVID MUNRO read an interesting paper entitled " Vision in Sport." He said that visual factors were not alone concerned in proficiency in games, good muscular co-ordination and kinaesthetic sense were as necessary as good visual judgment. He emphasized the importance of acquired memory perceptions and the receptive side of training. Instructors

of games should not attempt to train on the motor side until the perceptive side had been investigated and any faulty visual factors corrected. He classified the various types of visual judgments in games as follows:— (1) Those in which the player had to follow with both eyes the flight of an approaching or receding ball and to judge its pace; (2) games, such as golf and billiards, in which such factors as pre-judgment of the position of the ball after making the stroke, the distance, and angles of incidence and convergence were necessary; (3) shooting sports, in which the flight of an approaching or receding object had to be followed with both eyes and accurate timing carried out; (4) the monocular sport of shooting at a stationary or a moving target; (5) aviation and motoring, in which other perceptive factors such as touch and hearing were also brought into play.

The chief visual judgments to be made in games concerned pace, space, and place. Ocular balance is very important in judging distance. Sir David Munro concluded his paper by saying that if he were a teacher of ball games he would rely on the amblyoscope and stereoscopic charts for correcting the chief sources of visual error.

The discussion was opened by SIR JOHN PARSONS who commented upon the many important points that this paper raised. He spoke about the psychological and physiological problems involved in the perception of space and movement. He considered the importance of suppression in making certain visual judgments. He said that there were three types of visual judgment (1) Instinctive (thalamic) (2) Intuitional produced by habit and (3) Rational (formative) and illustrated this by describing the golf swing as an example of these three types. The physiological aspect of making visual judgments involved posture, reaction times, response to the whole situation, and interferences with intuitive response. He spoke of the teleological value of animal play.

The paper was keenly discussed by others including Mr. MacCallan, Colonel A. E. J. Lister, Mr. Mayou, and Dr. Rowan.

MR. GORDON WRIGHT described "A new method for the Treatment of Gonococcal Conjunctivitis in the Adult." He advocates the abolition of blepharospasm by temporarily paralysing the facial nerve with novocaine 10 per cent. and alcohol 10 per cent. A trephine hole is made through the upper lid just above the outer canthus. A rubber drainage tube is passed into this and sutured so that the end is flush with the palpebral conjunctiva. The conjunctival sac is repeatedly irrigated through the tube. Mr. Wright contended that the risks of corneal ulceration were thereby reduced.

MR. M. S. MAYOU read a paper on the "Treatment of Chronic Blepharitis." He described the various types of chronic blepharitis and the part played by the staphylococcus in these affections. He recommended the use of an autogenous vaccine of mixed staphylococci and Morax-Axenfeld bacilli; 1,000 million to be injected into the lids once a fortnight in very chronic cases.

MR. W. A. GRAY read a paper on "Retinal Vessel Changes in

Diabetes." His investigations were made on 228 diabetic patients having insulin treatment. Loss of translucency of the artery as it crosses the vein, and flexion of the vein to 20 or 30 degrees are the earliest changes. Mr. Gray gave statistics of arterio-sclerosis, incipient gangrene, senile cataract and other arterial diseases found in the patients he examined.

MR. BERNARD CHAVASSE read a paper on "The Nature and Antiquity of Stereopsis." He described the development of the fovea, stereoscopic vision and convergence in such fishes as the sea horse and John Dory.

DR. A. J. BALLANTYNE read two papers. The first "A case of Detachment and Reflection of the Retina," and the second "A case of Congenital Cataract with Unusual Features." These cases were admirably illustrated by paintings and drawings.

MR. R. C. DAVENPORT described "A case of Spasm of the Central Retinal Artery." The patient was a man of 57 who for one month had suffered from persistent pyrexia and pains in the limbs. There was frequency and difficulty in micturition, and the teeth and gums were infected. There was evidence of arterial spasm elsewhere. The blood pressure was raised. The patient had suffered from recurrent attacks of partial loss of the visual field of sudden onset. During an attack the pupil was fixed and dilated, the retinal arteries narrow and the retinal veins presented a "cattle truck" appearance. The optic disc was pale but not hazy. There was no cherry red spot for three minutes. Looking down induced an attack. Mr. Davenport discussed the possibility of a neuro-muscular element and a temporary toxaemia.

DR. RITCHIE RUSSELL read a paper on "Hereditary Aspects of Leber's Optic Atrophy, with a report of cases consequent upon the Mating of cousins." This paper was illustrated by a genealogical table.

MR. A. D. GRIFFITH read a paper on "Squint and Binocular Vision," and spoke of his experience with fusion and muscle training exercises.

MISS MADDOX gave a very interesting account of "The Orthoptic Treatment of Strabismus, Indications and Results." She said that the elimination of macular suppression was of paramount importance. She described the nature of the lessons and exercises in fusion training and the cultivation of the fusion-faculty. Her results, which are remarkable, were admirably illustrated by tables.

In the evening SIR ALMROTH WRIGHT delivered an address on "Vaccine Therapy." He described the methods of protection against infection, by lysozymes, anti-trypsin, and phagocytes. By means of diagrams he demonstrated diffusion factors at work between a 5 per cent. solution of sodium chloride and serum, and

spoke about the importance of this in the treatment of wounds. Antiseptics destroy lysozymes, phagocytes, and the body fluids when in sufficient strength to kill bacteria. Sir Almroth Wright dealt with the value of chemotherapeutic substances, such as salvarsan, which has an endo-seric and endo-haemic antiseptic action. He described the changes in the opsonic index of the blood when vaccines were used, also the process of immunization *in vitro* and non-specific immunization. The address was very interesting and admirably delivered.

DR. A. H. H. SINCLAIR described his operation of " Intra-capsular Extraction of Cataract," and the developments in its technique. The operation was illustrated by a cinematograph. Dr. Sinclair gave some notes on the cases he has operated on.

Saturday, April 25.

MR. S. SPENCE MEIGHAN read a paper on a " Case of Retinitis Pigmentosa treated by Cervical Sympathectomy." The field of vision on the side operated upon was improved.

MR. TUDOR THOMAS gave an account of " Experimental Transplantation of the Cornea in a rabbit to replace a Corneal Opacity." He described the technique of making a corneal graft and suturing it in position. Four rabbits were demonstrated at the Congress. Three of these had corneal grafts illustrating the effect of adherence of the iris to the base of the graft. In one rabbit the anterior synechia between the iris and graft gave way a week after the operation and the graft subsequently became clear. In others in which the iris remained adherent the graft was partially opaque. In the fourth rabbit an opacity was produced by applying an electro-cautery to the cornea. Seven weeks later a corneal graft was prepared and substituted for the corneal nebula, which was removed by trephining. On the 8th day after operation the graft was cloudy, and on the 13th day it was injected, but the iris was free. Two months later, the central part of the graft was just nebulous and six months later a histological section through the graft showed an increase of corneal nuclei and some blood vessels near the deep part of the cornea.

MR. I. R. PATERSON read a paper on " Some Notes on Eye Conditions in Compensation Cases in Scottish Miners." He gave a statistical survey of this subject and showed the prevalence of hypopyon ulcer among these injuries and their sequelae.

Dr. Ballantyne, in discussing the paper emphasized the importance of admitting cases of infected corneal ulcers into the ward of a hospital Bad sanitation and lack of careful treatment at home was responsible for the aggravation of the condition and the loss of time from work.

Mr. Cridland spoke about the difficulties in eliminating sources of infection and unhygienic conditions in mines. Hypopyon ulcer is liable to follow quite simple injuries under such conditions.

MR. C. SHAPLAND contributed an interesting and valuable paper on " An Analysis of 100 cases of Retinal Detachment treated by

Cautery Puncture." In December, 1929, Sir William Lister at Moorfields Eye Hospital carried out the first operation of cautery puncture (according to Gonin's technique) in this country and since then 100 cases had been so treated. 56 of the patients were males and 44 females. The average age was 41½ years. 32 patients had myopia over 5 D., and 24 less than this; 3 had aphakic eyes, and in 41 the refraction was either emmetropic or hypermetropic. In 56 myopes suffering from retinal detachment 9 gave a history of trauma as the exciting cause, in 41 emmetropes 16 attributed their detachment to trauma.

Mr. Shapland described 5 types of retinal holes, festoon, rounded or punched out, arrow-head, horse-shoe-shaped, and radial or slit-like. In some cases there were irregular rents. The commonest site was the periphery of the retina in the temporal half.

40 patients were discharged as cured and 17 others showed improvement either in the visual acuity or the area of the field. The average age of the cured cases was 34½ years.

Mr. Shapland's statistics regarding the prognosis and the type of case that affords a better chance of cure are worth studying.

Mr. Cole Marshall, Sir William Lister, Mr. Greeves, Mr. Juler, Mr. Whiting, Miss Mann, Mr. Davenport, Dr. MacRae and others took part in the discussion.

The afternoon was devoted to a visit to the National Institute for Medical Research, Mount Vernon, Hampstead, where by kind permission of Dr. H. H. Dale, C.B.E., F.R.S., many interesting demonstrations were given. Dr. Dale showed an apparatus for carrying out perfusion experiments. It was both elaborate and ingenious. Dr. Perdrau exhibited some rabbits suffering from herpes keratitis. Other demonstrations were Mr. Barnard, the microscopic examination of bacteria illuminated by fluorescent and ultra-violet light; Dr. Bourdillon, irradiation and distillation of ergosterol in relation to problems connected with vitamin D; Dr. Rosenheim, a colorimeter; Mr. Philpot, a new photometer; Capt. Douglas, infectious ectromelia, a virus disease of mice; Dr. Wilson Smith, vaccinial keratitis in rabbits: Dr. Gallaway, eye symptoms occurring in chickens suffering from polyneuritis probably due to a virus: and some histological sections by Dr. Laidlaw and Mr. Jeffery showing the permeability of the enamel of the teeth. There was also an interesting demonstration on the methods of preparing filters.

Exhibition.

During the Congress there was an exhibition of instruments, apparatus, and appliances, the exhibitors being Messrs. Bowing, Clifford Brown, Clement Clarke, Curry and Paxton, Down Bros., Dixey, Hamblin, Hawes, Keeler, Lewis, Pankhurst and Barrett, Rayner, Uni-luxe Optical Co., Weiss, Meison Wingate, and Carl Zeiss.

Annual Dinner.

The Annual Dinner of the Society was held at the Langham Hotel, the President, Mr. Leslie Paton, was in the Chair. The President in his speech expressed regret

for the absence of Sir Arthur Keith, Dr. Morax, and Professor Elliot Smith as guests. He referred to the letters of appreciation he had received from the distinguished foreign guests who attended the 50th Anniversary of the Society last year, and said that they had expressed their regard for the scientific value of the papers read before the Society on that occasion. It was probable that next year the Congress would be held in Edinburgh, where there would be a warm welcome. Mr. Leslie Paton expressed thanks to all those who had helped to make his term of office a pleasant one.

MR. M. S. MAYOU proposed the health of the guests, whom he described as personal friends of the Society. They prevented ophthalmologists from becoming hide-bound and narrow. In particular, he expressed gratitude to Dr. Watts Eden, the President of the Royal Society of Medicine, Dr. Dale, Professor Douglas, and Dr. Perdrau.

DR. WATTS EDEN responded to the toast to the guests. He said that the highway to the mind is through the vision, and that the care of the eyesight of the public deserved a very high place in the profession of medicine.

DR. GORDON HOLMES proposed the toast of the President. He spoke of his distinguished work and the service he had rendered to ophthalmology. In particular, he mentioned the work that the President had done in connection with the International Congress at Amsterdam.

H. B. STALLARD.

ABSTRACTS

I.—GENERAL MEDICINE

(1) **Favory, Albert (Paris).—A case of isolated ophthalmoplegia interna. (A propos d'un cas d'Ophtalmoloplégie intrinsèque isolée).** *Arch. d'Ophtal.*, May, 1929.

(1) The occurrence of ophthalmoplegia interna as an isolated symptom is so uncommon that reports of individual cases are desirable. As in most instances, only the clinical characters of this case are available. **Favory's** patient, now aged 34 years, gave a history that 10 years ago (September, 1919), he found, suddenly, that he was unable to see objects near to him, while his sight for distant objects remained undisturbed. He went to a hospital and spectacles (+ 4 D.) were prescribed. These he has used for reading, etc., since that date. The loss of reading vision was unaccompanied by other symptoms; he had no headache, vertigo or diplopia.

When examined by Favory the following conditions were noted:—bilateral but unequal mydriasis of moderate degree, the left pupil being larger than the right. The pupillary reflex to light and to convergence-accommodation completely abolished; the Galassi-Gifford reflex perceptible though feeble.

Distant vision was perfect with + 1 D. sph. + 0·5 D. cyl., and with + 4 D. sph. + 0·5 D. cyl. the smallest type was easily read.

The irides were free from signs of previous inflammation; the ocular media were clear, the fundi and tension normal. Ocular movements were unrestricted; there was no nystagmus, no

diplopia. A complete medical examination, neurological and visceral, revealed nothing unusual. Serological examination gave definite information: the Bordet-Wassermann reaction of the blood and cerebro-spinal fluid was positive.

Epitomised, the case is that of a young syphilised man free from all other lesions, presenting paralysis of iridic and ciliary muscles, of sudden onset, so that for 10 years he " comported " himself as a presbyope. The specific infection was determined only by serum tests.

In the remainder of his paper the author analyses the features of this and similar cases at great length and discusses various possibilities as to the site of the lesion.

The records of previous examples of the isolated form of ophthalmoplegia interna show that generally (unlike Favory's case) the onset is gradual and that mydriasis usually appears first, followed by loss of the iris reflexes and lastly by loss of accommodation.

The author believes that, in his patient, the lesion is situated in the floor of the third ventricle, where after destroying the tissue of the floor it attacked the nuclei of the intrinsic muscles of the eyes.

J. B. LAWFORD.

(2) **Adie, W. J. (London).—Permanent hemianopia in migraine and subarachnoid haemorrhage.** *Lancet*, August 2, 1930.

(2) **Adie's** article is of great importance in that it indicates that there is a relation between migraine and a definite anatomical condition, namely subarachnoid haemorrhage. The author states that he has found no reference in medical writings to " permanent hemianopia or other hemi-defects in migraine, migraine epilepsy, and spontaneous subarachnoid haemorrhage." Seven cases are fully described as to symptoms; an attempt will be made here to summarise these. *Case* I. Migraine 11 years. Two years ago had a fit: unconscious three hours. Paracentral scotoma of hemianopic type. This persists. *Case* II. Migraine 11 years: various subjective symptoms at times, sometimes unconscious. Three years ago blindness on left side, left arm and leg weak. Complete left homonymous hemianopia and left-sided pyramidal signs. The hemianopia remains unaltered, the other signs have almost disappeared. *Case* III. Migraine unknown duration. Thrice in 12 years left side became limp for a few minutes without loss of consciousness. Other subjective symptoms and then, three months prior to observation, an attack of dizziness followed by right homonymous hemianopia. *Case* IV. Migraine seven years. Five weeks ago misty vision left side, pins and needles left arm, various subjective symptoms, but did not lose consciousness. Left homonymous hemianopia sparing the fixation point. This

persists. A complete examination including the cerebrospinal fluid revealed nothing else abnormal. *Case* V. Headaches from the age of 13 years to age at present, 28 years. Early in the history noted a persistent black shadow in left visual field (binocular). This shadow in outer part of each field remained. During repeated headaches since 17 years old a greyness filled the remaining normal left field. Eventually shadow became a complete defect, which divided the fixation point. Investigation revealed nothing else abnormal. *Case* VI. Migraine ten years. During an early attack lost sight on left side for several days. Numerous subjective symptoms. " On two occasions several days after these attacks I found a definite extensor response on the right side. While he was in the National Hospital in an interval between attacks the plantar response on the right side was flexor or doubtful. Otherwise there were no abnormal signs." *Case* VII. (In full). " Mr. G., aged 31 years, came under observation for left homonymous hemianopia; this was noticed two years ago, when he went to work after being in bed for three days with severe headache and vomiting. Fourteen years ago he had an illness which was diagnosed as meningitis. His neck was stiff, and he had a very severe headache for two weeks. During this illness ' bloody fluid was drawn from the spine with a long needle.' The headache on this occasion was ' just like the one when the sight went.' Seven months ago he had two fits with ten days' interval between them; they came on without warning; he lost consciousness, was convulsed, and bit his tongue; they were not preceded by a headache: he recovered completely in an hour or two." Complete left homonymous hemianopia just sparing the fixation point was found. Eighteen months later some recovery had occurred in the central parts of the fields only. At this time nothing abnormal was found apart from the field defect. Adie at this time reported that he had " little doubt that he (the patient) has a congenital aneurysm that leaks from time to time."

The author's comment on these cases can hardly be abstracted with much hope of making it intelligible. It should be read in the original. All that can usefully be said here is that he discusses the symptoms and history of subarachnoid haemorrhage and of congenital aneurysm and shows how similar the history of subarachnoid haemorrhage is to that of patients with a long history of migraine and epilepsy. He concludes that there is an intimate relation between migraine and spontaneous subarachnoid haemorrhage and that " some recurrent disturbance of the cerebral circulation whose nature is at present unknown may, in minor form, manifest itself in symptoms for which migraine and epilepsy are convenient labels and, in major form, lead to infarction of the cerebral cortex or haemorrhage into the subarachnoid space."

ERNEST THOMSON.

(3) **Bowcock, H. (Atlanta, Georgia) and Lewis, Geo. T. (Emory, Georgia).—Brittle bones and blue sclerotics. Report of a case with glycosuria.** *Annals of Internal Medicine*, Vol. III, p. 700, 1930.

(3) **Bowcock** and **Lewis** report a case of fragilitas ossium associated with blue sclerotics in a girl aged 4 years, and bring out some points of interest. Contrary to the usual type there is no history of the disease in the family of the patient; apparently the case is a sporadic one, and examples of this feature have been recorded by other observers. The glycosuria present in the author's case "probably represents a coincidental anomaly;" clinical symptoms of diabetes were absent, the glycosuria probably being "the result of a low renal threshold." The results of estimations of calcium and of phosphorus in the blood are given, and when taken together with the findings in four cases by two other observers, lead the authors to conclude that serum calcium may be normal or slightly elevated, while the blood phosphorus is normal. Calcium and phosphorus were also estimated in the urine and the stools, and in the latter both were found in abnormally high percentages; there was a suggestion of faulty absorption of calcium and phosphorus from the intestinal tract. (A list of references to recent work is given).

ARNOLD SORSBY.

(4) **Kunii, H. (Tokio).—On a family with blue sclerotics and investigations concerning its hereditary characteristics. (Ueber einen Stammbaum der blauen Sklera und ihre vererbungstheoretischen Untersuchungen).**

Togano, N. (Tokio).—Three families with blue sclerotics. (Ueber drei Stammbäume der blauen Sklera). *Zeitschr. f. Augenheilk.*, Vol. LXXI, p. 328 and Vol. LXXII, p. 36, respectively. 1930.

(4) **Kunii** gives a valuable review in tabular form of the literature on the subject of blue sclerotics associated with other lesions; one table analyses the type of associated lesions seen in 353 cases reported by different observers, and the distribution according to sex. Data concerning the mode of transmission are also analysed. Another table gives the more important genealogies reported. The author himself has investigated five generations of one family, consisting of 94 members. As a result of his own careful studies and of his analysis of the literature the author concludes that sex is a factor of no consequence either in the inheritance or the transmission of the affection; the lesion is a dominant character, half the stricken family being affected. Fragilitas ossium is present in nearly 50 per cent. of the cases,

but deafness is less than 20 per cent. In his own cases he found the blue colour of the sclerotic in its purest form in the youngest members; with advancing age the blueness becomes less marked. As far as the colour of the sclerotic is concerned the author stresses the existence of intermediate forms between the fully established condition and the normal—the mildly affected as he calls them; these intermediate forms were more frequent than is generally the case with hereditary affections. Fragilitas ossium and dislocations of joints he found mostly in the young, especially between 10 and 20 years of age; the course of these complications seems milder than is usual with fractures and dislocations. His experience as to the onset of deafness agrees with that of other observers: in his cases none of the young members had affected hearing; deafness only became apparent in the middle-aged. In only three of his 22 cases was myopia present.

Togano follows up the article of his colleague with a record of the genealogies of three families with blue sclerotics, 34 individuals being affected out of 71. He agrees with Kunii that the character is a dominant, and that sex is not a factor. Deafness was present in five individuals, all belonging to a family of 47, of whom 21 were affected. Only one case in his series had high myopia; like Kunii, the author sees no connection between the two conditions.

The references at the end of the papers are supplementary one to the other, and together appear to constitute a complete bibliography on the subject.

ARNOLD SORSBY.

(5) **Landegger, Georg (Vienna).—On familial cerebro-macular degeneration. (Zur Kenntnis der familiären amaurotischen Idiotie. Typus Spielmyer-Stock).** *Zeitschr. f. Augenheilk.*, Vol. LXII, p. 179, 1930.

(5) In view of the fact that some cases of Tay-Sachs disease have shown enlargement of the liver and spleen and also increase of lipoid in the blood (Pick-Niemann's disease), it has been suggested that even in those cases where this association is not present, it is possible that on account of some metabolic disturbance the ganglion cells are unable to absorb the lipoids supplied. **Landegger** in describing two cases of familial cerebro-macular degeneration reports that there was no enlargement of the liver and spleen in his cases, and that the blood-lipoids were normal. The hypothesis of defective lipoid absorption could not be tested.

ARNOLD SORSBY.

(6) **Coleman, C. G. (Virginia).—Brain abscess.** ***Jl. of Amer. Med. Assoc.,*** August 23, 1930.

(6) In this paper **Coleman** reviews 28 cases of brain abscess and comments on the ocular findings. Abscess of the brain originates from septic encephalitis and is not considered amenable to surgical treatment until encapsulation of the abscess has taken place. Many of the symptoms after encapsulation, as well as the results of treatment, will depend either on the persistence of the original encephalitis or on a recrudescence of the condition. The mild disturbances of the so-called latent stage of many abscesses may be explained by the disappearance of the diffuse inflammation that characterises the stage of development and capsule formation.

A successful outcome in the treatment of brain abscess depends largely on the removal of the localised infection without the production of an extensive encephalitis.

A diagnosis of brain abscess is rarely made in the first stage of its development, but reasonable grounds for diagnosis after encapsulation may be found in the history of a previous infection of the mastoid or paranasal sinuses, provided there is evidence of a localised intracranial disturbance. When the intracranial complications persist or increase after the sinus or mastoid has been dealt with surgically there is reason to suspect the presence of an abscess of the brain.

Papilloedema was found to occur with about the same frequency in brain abscess as in brain tumour. Occasionally there are no optic nerve changes in brain abscess whether situated in the frontal lobe, the temporal lobe or in the cerebellum; this was the case in ten of the author's 28 cases.

There is a possibility of the abscess rupturing when there is evidence of a high degree of intracranial pressure, and therefore operation should not be delayed unduly.

There appears to be no definite relation between the size of the abscess and the degree of papilloedema. The greatest elevation of the discs was found with the smallest abscesses, and the largest abscess of the series, in the frontal lobe, had no ocular changes. In the small encapsulated abscess a high degree of papilloedema is due either to persistence of encephalitis around the capsule or else to massive cerebral oedema, such as is sometimes associated with brain tumour.

In the series reported a satisfactory study of the fields was made only in nine cases. The inability of the patient to co-operate in even rough tests was the usual cause of this. Quadrantic defects of the fields in temporal lobe abscesses should be found as often as in tumours in the same situation, were it not for the stuporous condition of most patients.

The ocular palsies were of little importance in the series.

There is still much difference of opinion as to the best method of treating an encapsulated abscess. Some surgeons rely on single or repeated tappings without drainage of any kind, and while this procedure may seem inadequate it must be remembered that patients who die after operation generally succumb to encephalitis produced by the efforts at drainage.

The most dangerous type is the thickly encapsulated and deeply seated small abscess. The abscess wall is penetrated with difficulty by the ventricular needle, and it is almost impossible to insert even a small drainage tube into such an abscess without injuring its walls and causing extensive encephalitis.

Subtemporal decompression should be done at the same time as the tapping operation, in view of a probable rise of intracranial pressure.

Macewen, from his large and successful experience with brain abscess, regarded it as one of the most favourable of cerebral lesions. This optimism has been accepted with some reservation. However, if the solitary encapsulated abscess is meant Macewen's opinion is justified.

In the discussion following the paper Sachs (St. Louis) animadverted on the aural surgeon who tries to drain an abscess through an infected mastoid wound. He also instanced several cases in which brain abscesses cleared up after aspiration without any attempt at drainage.

A. F. MACCALLAN

(7) **Larsson, Sven (Stockholm).—Fundus changes in leucaemia. Zur Kenntniss der Augenhintergrundveränderungen bei Leukämie).** *Acta Ophthal.*, Vol. VIII, p. 22, 1930.

(7) In 14 cases of leucaemia, 7 being of the lymphatic type and 7 of the myelogenous, **Larsson** found fundus changes in 10 cases consisting of 5 of each group. Typical leucaemic retinitis associated with papilloedema was observed in 3 cases of lymphatic leucaemia, and one case of myelogenous leucaemia showed definite swelling of disc and retinal haemorrhages. The presence of swelling of the disc in these four cases led the author to lumbar puncture in order to determine whether increased intracranial pressure was present in them. This he found to be the case; lumbar puncture performed on one of the remaining 10 cases which did not show swelling of the disc, gave a negative result. In none of the four cases with swelling was the kidney function quite normal, though none of them showed increased blood pressure. A post-mortem examination of one case revealed lymphocytic infiltration of the kidneys.

The author argues that the essential condition in leucaemic retinitis is papilloedema, modified in its appearances by the fact that the pressure produced on the retinal vessels by swelling of the

disc gives rise in such cases to a characteristic picture, the basis of which is the excessive tendency to haemorrhages that leucaemic cases show in general. The papilloedema itself he regards as due to increase in intracranial pressure.

Larsson draws a parallel between these cases and neuro-retinitis of nephritis. He recalls that in vascular hypertension and in nephritis, papilloedema may exist with or without other fundus changes. When retinal involvement is present its appearances are determined by the state of the retinal vessels, papilloedema in a fundus with normal vessels following a different course from that seen in the fundus of a nephritic. In all these cases the uniform cause of papilloedema operates on differing backgrounds, producing different pictures.

The essential similarity of fundus changes in leucaemia and nephritis is also reflected in the pathology of these diseases. In both there are changes, though dissimilar in nature, in the blood and blood vessels; in both some cases show increased intracranial pressure; kidney deficiency may be present in leucaemia as well as in nephritis. The primary cause of fundus changes in both these conditions is probably increased intracranial pressure produced by changes in the blood pressure and in the vessel wall. In the absence of increased blood pressure in leucaemic retinitis the author sees evidence for this factor being only a concomitant condition and of subsidiary importance in the development of neuro-retinitis in kidney disease.

ARNOLD SORSBY.

II.—LACRYMAL APPARATUS

(1) **Ploman, K. G. (Stockholm).—Continued investigations on the lacrymal passages.** *Acta Ophthal.*, Vol. VIII, p. 155, 1930.

(1) That the canaliculi pump tears from the conjunctival sac into the lacrymal sac is generally admitted, but the function of the sac itself in the conveyance of tears is very much in dispute. There are those who hold that the sac takes no active part in the pumping mechanism of the lacrymal apparatus, that its movements are irregular and only help in the conveying of tears from the sac on to the nose. The opposite view is supported by Krehbiel's phenomenon, which consists in keeping the eyes open after having winked several times in fairly rapid succession, upon which the liquid in the conjunctival sac is for a short space of time sucked into the openings of the canaliculi. It is held that the lacrymal sac is compressed during the rapid closing phase in winking, and then more slowly dilated during the opening phase; and the explanation

of Krehbiel's phenomenon is that the lacrymal sac has not sufficient time to become fully dilated in the interim between the rapidly succeeding movements of winking, but does so only when the eyes are kept open long enough.

Ploman who has previously shown that the sac diminishes in volume on forcible contraction of the lids and that it then assumes a characteristic shape, the lower end being compressed and the upper end remaining unchanged or even dilating, studies in the present article the radiographically demonstrable changes when the eyelids are widely separated. Volumetric experiments are also described and in addition the frequency of the Krehbiel phenomenon is studied. It is shown that in the closing phase of winking the increased intra-orbital pressure causes the canaliculi to empty their contents into a lacrymal sac with taut walls. The effects on the sac are not constant; in all cases the increase of intra-orbital pressure gives support to the wall of the lacrymal sac, thus ensuring that the sac does not become passively dilated through the fluid squirted in by the canaliculi, but in some cases only does the increased intra-orbital pressure cause actual distribution of the volume of the sac. In such cases the alternate compression and expansion of the sac is therefore an active factor in the pumping of tears from the conjunctival sac. In those cases in which the lacrymal sac is not actually compressed but only supported by the rise in intra-orbital pressure, it is probable that the sac takes no active part in the conveyance of tears. The author leaves it an open question which type of mechanism is the more efficient. In either case it is the canaliculi which are the most important part of the pumping mechanism.

ARNOLD SORSBY.

(2) **Gualdi, Vincenzo (Parma).—A familial deformity of the nose and its relation to affections of the lacrimal passages. (Anomalia di conformazione ereditaria e familiare del naso e suoi rapporti con le affezioni delle vie lacrimali.)** *Boll. d'Ocul.*, July 1930.

(2) **Gualdi** observed a family in which many members were subject to obstruction of the nasal duct; he noticed that they had marked peculiarity of the face; the nose was mis-shaped; the root being very large and the distance between the eyes thereby increased. He examined a large number of skulls in the Museum of the University of Genoa, and found among 100, twelve which showed the condition of the nose similar to that which he had noted in his cases. In all these skulls, the upper opening of the nasal duct was narrowed; "in the abnormal skulls we find the breadth of the root of

the nose increased, and also the size of the opening of the nose; the nasal bones much smaller than normal and markedly flattened; the ascending process of the superior maxilla rotated forwards; the lacrymal bone flattened and in consequence the fossa lacrymalis and the naso-lacrymal canal pushed forward; the lacrymal fossa is diminished in depth; the superior openings of the duct and the duct itself are flattened and constricted. The inclination of the duct in the transverse plane is increased. All these changes are more marked, the greater the size of the root of the nose." These changes are responsible for the predisposition toward dacryocystitis which Gualdi found in the family under consideration. He gives a tree which shows members of three generations affected.

HAROLD GRIMSDALE.

III.—MISCELLANEOUS

(1) **Pillat, A.** (Peking).— **On the similarity of ocular features in uniovular twins and on mirror symmetry of some of these features.** (**Zur "Ähnlichkeitsdiagnose" der Augenmerkmale be eineiigen Zwillingen und ueber "Spiegelbildsymmetrie" gewisser Merkmale**). *Zeitschr. f. Augenheilk.*, Vol. LXXI, p. 35, 1930.

(1) **Pillat** recalls the remarkable correspondence of features in uniovular twins. Even the impressions of hands and feet are similar in appearance, down to the detailed features of the papillary ridges. The author reports in detail his findings in uniovular twins, aged 4 years. In common with their mother the children had convergent squint, compound myopic astigmatism, oblique entry of the optic nerve into the eye, and like the mother, the children were born at seven months. A series of features were very similar in the two children. Thus, the eye-brows as regards length and curvature were similar: in both the right brow was more hairy than the left. The folds in the upper lids were similar in position and contour; both children showed epicanthus to the same degree, covering the puncta to the same extent. The lashes as regards length, colour and direction were similar, the similarity extending down to the abnormal distribution they showed. A striking similarity was shown in the corneal astigmatism; it was 1·5 D. in each eye, and the oblique axes showed exact correspondence in the two children. On the other hand there was mirror-symmetry in some features. Thus one child had squint in the right eye, the other in the left. The squinting eye in both children had the higher refractive error, was amblyopic, had the more marked conus at the disc and the cornea had a smaller horizontal diameter;

there was, therefore, mirror-symmetry in these features. Mirror-symmetry was likewise shown by the radius of curvature and refraction of the cornea.

ARNOLD SORSBY.

(2) **Zahor, A. (Prague).—The disappearance of manifestations of copper in the eye. (Das Verschwinden des Verkupferungserscheinungen des Auges).** *Zeitschr. f. Augenheilk.*, Vol. LXX, p. 171, 1930.

(2) **Zahor's** communication follows on that of Jess (*Brit. Jl. of Ophthal.*, Vol. XIV, p. 425, 1930). The author describes two cases where fully formed changes due to chalcosis ended in complete resolution. In one case a typical sunflower cataract and also a golden-yellow partial star at the macula, had formed six years after the original injury due to a bomb-explosion, which had caused the loss of one eye and an unobserved entry of a fragment of copper in the other. Four years later neither lens nor retina showed any trace of the earlier manifestations of copper, though the foreign body was still in the eye, no attempt having been made to remove it. Vision, which had been poor during the time of active changes, became restored to 6/9.

In the second case early chalcosis was observed one year after the accident: a fully formed sunflower cataract was present four years later, when the vitreous was yellowish and a yellowish lesion was seen on the retina. The condition remained unchanged for a year, but became almost completely resolved within the following year. Vision was fully restored.

ARNOLD SORSBY.

BOOK NOTICES

Hereditary Optic Atrophy (Leber's Disease). By JULIA BELL, M.A. The Treasury of Human Inheritance. Edited by KARL PEARSON, F.R.S. Anomalies and Diseases of the Eye. Nettleship Memorial Volume. Vol. II, Part IV. Cambridge University Press, 1931. Price, 36/-.

This work, surely the most comprehensive, and with the possible exception of Leber's original paper, the most valuable contribution to the literature of hereditary optic atrophy, is another notable product of the skill and industry displayed by Miss Bell, in this type of research.

Hereditary optic atrophy is eminently suitable as a subject of a part of the Nettleship Memorial volume. It claimed Nettleship's active interest for many years; indeed, no less than twenty-three of the numerous observations here collected were recorded by him,

and the author tenders in her work "a warm appreciation of the work of Nettleship on Leber's disease."

A life-like portrait of Theodor Leber forms an appropriate frontispiece; following the letterpress are: a name-index to the chronological bibliography and to the recorders of pedigrees, a bibliography of 153 references; descriptive accounts of 16 plates, containing 225 pedigrees, some of which are extensive and complex.

In the introductory paragraphs, Beer (1817) is credited with the earliest reference to the disorder; in 1858 von Graefe published a report of three brothers, subjects of the disease. In 1871 Leber's paper appeared, and concerned nine cases in four families, and reports of six allied cases. His description of the essential characteristics of the disease was so thorough that but few additions to our knowledge have accrued since that date.

Following the introductory pages, the main features of hereditary optic atrophy are considered in six sections. This part of the volume is of absorbing interest and contains, in addition to numerous statements of fact, analytical remarks on points open to doubt, or to diverse opinions. Lack of space alone prevents a lengthy review, and brief references to some of the many points of interest must suffice.

(*a*) *Sex-incidence.*—Until recently hereditary optic atrophy has been classed among the sex-limited diseases. Miss Bell's figures show that this view is untenable. Among Europeans the numbers are: males 863, females 155. Among Japanese, the proportion of females is much higher, the numbers being: males 97, females 67. This relative sex-limitation leads the author to discuss the question in reference to this and other hereditary diseases usually placed in this category; her conclusion is that "The sole condition, within my experience, which appears to be perhaps truly sex-limited is haemophilia," and she quotes Bulloch's statement: "So far as we can find . . . no case has yet been described in a female which bears more than a superficial resemblance to the disease (haemophilia) as found in the male."

(*b*) *The character of the onset and age at onset.*—"The onset in hereditary optic atrophy is a very indefinite term, the particular significance of which may vary from one case to another. . . ." The writer is unwilling to make a more definite assertion than "probably a majority of cases reach this maximum disability within two months from the time at which the patient becomes aware of failing vision."

From the material collected a graph has been constructed showing "the grade of liability to develop the disease at each period of life in males and females." The peak is reached in European males at 20-23, and in females at 12-15. In the Japanese records the figures (as in sex-incidence) are noticeably different. The male curve for

Europeans shows that the majority of cases occur "within the period which should be of maximum efficiency . . ."; this seems to be consistent with the view that the disorder "arises from an inherent defect of vitality." The author is inclined to accept hereditary optic atrophy as one of the abiotrophic diseases, but has some doubt whether such a curve as it exhibits can be accepted as illustrating "the age of onset characteristic of abiotrophic disease in general." Investigation of completed histories of the disease in successive generations indicates that there is no evidence of ante-dating in the age of onset in a succeeding generation.

(*c*) ***Clinical signs and symptoms.***—In discussing colour-blindness as a symptom, the author tells us that "there is no evidence that hereditary optic atrophy tends to occur in the subjects of congenital colour-blindness," nor has any recorded case been found "in which an acquired disturbance of colour vision was noted prior to the onset of atrophy as indicated by lowering of visual acuity for form . . . "

(*d*) ***Course and Prognosis of Hereditary Optic Atrophy.***—A tabular statement giving the duration of the disease at the time of the latest record seems to show that there is no marked tendency to a relatively early death. The question of heavy infantile mortality in families exhibiting this disease (generally accepted as an established feature) is discussed: analysis of selected pedigrees leads the author to state that "without pledging myself to any view as to whether the association of high child mortality with hereditary optic atrophy . . . is a chance or a significant relationship, I do not think it would be easy, if possible, to obtain figures showing a similar degree of association from an equal number of pedigrees of other non-fatal hereditary diseases."

The early deaths exhibit no significant sex selection, which might be expected if the cause were at all closely connected with the hereditary disease; the sex ratio differs little from that for deaths under five, in the general population.

Comparatively few reports of cases furnish reliable information concerning improvement or recovery. In the author's records are "211 cases in males, which appear to have shown no improvement over a period of years, and 86 in which improvement has been noted; 12 of the 86 showed complete recovery of vision. . . ." In females the figures, concerning improvement are too limited to be of value.

Certain tentative conclusions are reached as the result of analysis of the material available; two of these are (1) an early onset, say before the age of 16, "would appear to denote a relatively favourable outlook." (2) "Not only is the liability to the disease inherited but also its prognosis for the individual," *i.e.*, improvement occurs more readily in certain stocks than others.

(*e*) ***The association of other disabilities with hereditary optic***

atrophy.—"A careful search through the collected material reveals no disease characteristically associated with hereditary optic atrophy."

(f) Hereditary character of the disease, and its mode of transmission.—The questions, numerous and interesting, which arise in this section are discussed lengthily and judicially: to epitomise is difficult and apt to be misleading, but a few points may well be noted. Lossen's law, *i.e.*, the transmission of certain sex-limited hereditary diseases entirely through the female line, has proved to be inapplicable to haemophilia; following this "statements have been made that hereditary optic atrophy would be shown to be commonly transmitted through the male . . ." This assuredly is not the case. A number of pedigrees "show normal grandsons of affected males, but many more show affected individuals who were known to have an unaffected maternal grandfather. . . ." "There is no doubt that this disease is transmitted very generally through the female, who is commonly unaffected, and that in a large proportion of histories the transmission has probably been confined to the female line. . . ."

Of 573 affected males 95 per cent. owe their affection to the mother, and of 88 affected females 84 per cent. owe their affection to the mother.

An interesting table "showing the relative apparent responsibility of males and females for the transmission of hereditary disease" is given. This includes 7 forms of hereditary disease in addition to hereditary optic atrophy and merits careful observation. It shows "the heavy actual responsibility of women in this matter, whatever may be the underlying causes operating to produce this state of affairs. . . ."

". . . I have no doubt, with regard to hereditary optic atrophy, that if the sisters of affected males abstained from parentage the disease would be almost exterminated."

The production of the volume by The Cambridge University Press is, as usual, beyond criticism.

Transactions of the Ophthalmological Society of the United Kingdom. Vol. L, pp. 946. London: J. and A. Churchill. 1931.

The 50th volume of *Transactions* forms a worthy memento of the annual congress held to celebrate the jubilee of the society last year. In bulk it forms the largest volume of the series; this is due to the fact that the last third of the book contains the decennial index for the years 1921-1930. Always in previous years this fact has been indicated on the cover, but for some reason it has been omitted in this volume. The transactions of affiliated societies, of

course, swell out the volume, particularly the very able Doyne memorial lecture by Harry Friedenwald at the Oxford Congress.

The *Transactions* for the year 1925, in two volumes, run to 985 pages; for the rest, Volume XLIII, with 721 pages, is the next largest single volume to the present, though Volume VI, with only 530 pages, looks bigger.

We hope to notice the more important contributions to this volume in future numbers. Here we will content ourselves in offering the congratulations of British ophthalmology to the treasurer of the society, Sir Arnold Lawson, on the highly satisfactory result of his negotiations with the Inland Revenue authorities. These have resulted in the society receiving the substantial sum of £75 8s. 7d., as a refund of income tax.

The society is in very strong condition, both financially and as regards membership. Long may this satisfactory state of affairs continue.

Cadilhac. L'Extraction Totale de la Cataracte par l'Erisiphaque. (Methode de Barraquer.)

This book contains a detailed account of the Barraquer technique and concludes with an analysis of the last thousand cases on which Professor Barraquer has operated.

Recent research has been directed to the study of the elasticity of the zonular fibres which are of such great importance in this operation, and Professor Barraquer has, in course of construction, an instrument, based on electro-magnetic principles, with which it is possible to measure this elasticity. Past the age of forty, these fibres will sustain a stretch of about one millimetre: the amount of stretch bears an inverse ratio to the age of the subject.

The latest model of the erisiphake has the gauge incorporated in the pedestal; it is capable of producing a negative pressure of 45 to 75 cms. of Hg and at the same time, lateral vibrations of from 5 to 6,000 per minute, thus acting, not only as a vacuum but also as a zonulotome. Successful extraction by this method depends on the accurate apposition of the suction disc to the lens capsule; this, in turn, depends on adequate dilatation of the pupil. There appears to be a little difficulty in maintaining this after the aqueous has been evacuated. Barraquer relies on 5 per cent. euphthalmine with 5 per cent. cocaine and adrenaline, whilst Saint Martin, a pupil, finds that sub-conjunctival injections of adrenaline are necessary.

The appendix of results of the last thousand cases at the Barcelona Clinic have not been hitherto published.

In 787 cases there were no post operative complications, whilst in 91, there was hyphaema, and, in a like number, there was re-opening of the wound.

The visual results are as follows:—680 cases had vision of 10/10; 145, 10/10 to 7/10; 108, 7/10 to 4/10; 58, 4/10 to 1/10.

Nine cases had vision of 1/10 to 0. Of these, 299 cases were without astigmatism. The results would be of still greater interest if they had been detailed as to each type of cataract instead of for the class as a whole.

This lucid account and the excellent results obtained will go far in stimulating renewed interest in the Barraquer method of intracapsular extraction.

Proceedings of the All-India Ophthalmological Society. Vol. I, 1930.

The first Congress of the All-India Ophthalmological Society was held in Bombay in April, 1930. The Proceedings contain a list of the officers, committee, and the sixty-four members; also a copy of the rules and regulations of the society.

Dr. B. P. Banaji, Chairman of the Reception Committee, delivered an address of welcome. He spoke of the need for co-operation between Indian ophthalmic surgeons and their professional colleagues in Europe and the rest of the world, particularly in combating such diseases as trachoma. He reminded them of the necessity for research work in the prophylactic and remedial treatment of blindness.

Dr. B. G. S. Acharya gave the Presidential address. He brought to the notice of the meeting the recent action of the General Medical Council with regard to the recognition of medical degrees conferred by Indian Universities. He stated that the object of the society was the pursuit of knowledge for its own sake, and urged the maintenance of a high ethical standard. He described ophthalmology as a specialty, the growth of the fundamental sciences, practice, teaching, research work, and curative and prophylactic measures.

Among the more important papers are the following:—Distribution of trachoma in India and some points with regard to its treatment, by Dr. C. N. Shroff; Operative treatment of spring catarrh, by Dr. C. N. Shroff; Treatment of corneal ulcers, by Dr. B. G. S. Acharya; Some observations on the severe forms of corneal ulcer in the Mysore Province, by Dr. B. N. Narayana Rao; Eye affections in leprosy, by Dr. R. P. Ratnakar; Report on a case of acute retrobulbar neuritis in acute myelitis, by Dr. P. P. Subba Rao; Report on a case of unilateral microphthalmos with non-separation of the lids, by Dr. P. R. Subba Rao; Certain cases which relate to the sinuses round the eye and affecting the eye, by Dr. T. D. Dhruv; and lastly a paper on Eye diseases and their treatment in the time of Sushruta, by Dr. D. D. Sathaye, who described the treatment of cataract and trachoma about 500 B.C., and gave references to original manuscripts.

The papers were followed by discussions.

The National Medical Journal of China. Vol. XVII, No. 1, February, 1931.

Volume XVII, No. 1 of this journal, is produced as a memorial number in honour of the late Professor Ernst Fuchs, visiting Professor of Ophthalmology in China in 1922.

L. Sallmann has written an obituary notice in appreciation of the life and work of the Professor, and a signed photograph of him is reproduced on the frontispiece.

There are several original articles of interest written in English, particularly a clinico-pathological report of ocular neoplasms among the Chinese, by W. P. Ling. Dr. H. T. Pi has written an interesting account of western ophthalmology in China, and a résumé of an ancient Chinese treatise on ophthalmology.

There are editorial articles about post-graduate training in ophthalmology, and the prevention of blindness in China.

At the end of this journal there are annotations, book reviews, and finally another article by H. T. Pi and W. P. Ling in appreciation of the late Professor Ernst Fuchs.

NOTES

Appointment

Mr. ADRIAN CADDY has been appointed Surgeon to The Royal Westminster Ophthalmic Hospital, on completion of five years' service as Assistant Surgeon.

* * * *

The Cirincione Prize of the Italian Ophthalmological Society

THE Italian Ophthalmological Society is offering a Prize—the Cirincione Prize—of 20,000 lire (about £215) for an original work in the field in Ophthalmology, completed during the years 1931 and 1932. The work should be in Italian and typewritten in three copies. It must be sent in not later than August 31, 1932. Ophthalmologists holding Professorial Chairs and those who are over 45 years of age are not to be allowed to compete. In addition to the first prize, there will be a Gold Medal to be presented to the second and also to the third competitors, in order of merit.

For any further information on the subject intending competitors should apply to the President, Prof. Giuseppe Ovio, R. Clinica Oculistica-Policlinico, Rome, or to the Secretary, Prof. Romeo Roselli, at the same address.

White Oak Schools, Swanley, Kent

REPORT by M. S. Mayou, F.R.C.S., visiting ophthalmic surgeon, on the treatment of eye diseases at White Oak, Swanley, Kent.

The admissions for the year 1930 and the diseases from which they suffered were as follows:—

Trachoma	42
Chronic conjunctivitis	33
Marginal blepharitis	92
Phlyctenular ophthalmia	95
Follicular conjunctivitis	15
Ulcer of cornea	10
Interstitial keratitis	36
Mucopurulent conjunctivitis...	1
	324

The following were discharged as cured:—

Trachoma	35
Chronic conjunctivitis	31
Marginal blepharitis	46
Phlyctenular ophthalmia	90
Follicular conjunctivitis	5
Ulcer of cornea	—
Interstitial keratitis	37
Mucopurulent conjunctivitis...	3
Dacryocystitis...	1
Total cured	248

SUMMARY.

Remaining January 1, 1930	250 at White Oak 7 receiving treatment at other hospitals	
Admitted during year		324
Discharged cured		248
Removed before cured by parents, etc. ...		37
Unimproved (not treated)		1
Remaining December 31, 1930	285 at White Oak 10 receiving treatment at other hospitals	

The following statistics show the average number of days of stay in the hospital of the various groups of cases:—

1930. Disease	Cured	Improved	Unimproved	Total	Av. days stay of Dischd. cases
Trachoma	35	5	—	40	676
Chronic conjunctivitis ...	31	3	—	34	215
Marginal blepharitis ...	46	17	1	64	364
Phlyctenular ophthalmia ...	88	6	—	49	249
Ulcer of cornea	—	—	—	—	—
Follicular ophthalmia ...	5	—	—	5	137
Mucopurulent ophthalmia ...	3	1	—	4	100
Interstitial keratitis ...	37	2	—	39	274
Dacryocystitis	1	—	—	1	522
Superficial keratitis ...	2	3	—	5	86
	248	37	1	286	

During the year children suffering from trachoma have been transferred from the Roman Catholic residential school St. John the Baptist, Woodford Bridge, Essex, and some from St. Mary's School, North Hyde, Southall.

The following extract from the Health of the School Child (Board of Education) for the year 1929 is of great interest, as it shows that London has now less external diseases of the eye than any county or borough in the Kingdom. I think that this may be fairly said to be the result of School medical inspection with subsequent treatment at Swanley.

"The accompanying Table* shows, for each group of disease, the number and incidence of cases requiring treatment or observation found in 1929, on the occasion both of routine and special inspections. The most striking feature in this analysis is that the incidence of these conditions of external eye disease in the County Boroughs is very much greater than in the County areas and considerably exceeds the incidence in the Boroughs and Urban Districts. It is noteworthy that in London the incidence is less in every case than that obtaining in any of the groups, including even the County areas. A comparison of the figures in the Table with those for five years ago shows that, while there has been little change in the incidence of these diseases in the County areas and in London, the incidence in the Boroughs, Urban Districts and County Boroughs is slightly higher. This is due mainly to an increase (from 4·34 to 5·42 per 1,000 of average attendance) in the number of cases of conjunctivitis and, in a lesser degree, to an

* The Health of the School Child, 1929, p. 105.

increase (from 2·94 to 3·21 per 1,000) in the cases classified under 'other conditions.' There has been a slight decrease (from 0·29 to 0·26 per 1,000) in keratitis and in corneal opacities (from 0·52 to 0·49 per 1,000) while the incidence of blepharitis is practically unchanged."

* * * *

St. Margaret's Hospital for Ophthalmia Neonatorum

THE annual returns for St. Margaret's Hospital for Ophthalmia Neonatorum for the years 1929 and 1930 are as follows:—

No. of children admitted		No. of children discharged with both eyes blind		No. of children discharged with single eye blind		No. of eyes with impaired vision	
1929	1930	1929	1930	1929	1930	1929	1930
224	196	1	1	1	2	17 (6 both eyes, 5 single eye)	(7 single eye, — both eyes)

DEATHS—BABIES 11.

Syphilis and ophthalmia neonatorum	4
Meningitis	1
Marasmus	1
Gastro-enteritis	1
Bronchial pneumonia	1
Congenital morbus cordis and ophthalmia neonatorum ...	1
Acute hydrocephalus and meningitis	1
Erysipelas and bronchial pneumonia	1
	11

During the year 1930, the admissions to St. Margaret's Hospital numbered 196 babies and — mothers. 11 babies died, representing a death rate of 5·6 per cent., as against 10 (4·4 per cent.) for 1929. Although the numbers of damaged eyes are less there are still far too many.

From time to time cases are admitted with damaged corneae as the result of too strong or too frequent use of nitrate of silver, or perchloride of mercury.

During the year large numbers of midwives visited the Institution, but not one medical student. It seems unfortunate that medical students should not have the opportunity of seeing the disease and the method of treating it during his curriculum, so preventing such disasters as sometimes occur.

FUTURE ARRANGEMENTS

1931

June 5.—Midland Ophthalmological Society, at Cheltenham.
June 12.—Section of Ophthalmology, Royal Society of Medicine. (Annual Meeting).
July 8-11.—Oxford Ophthalmological Congress, at Oxford.
July 22-24.—Annual Meeting, British Medical Association, at Eastbourne.
October 6.—Midland Ophthalmological Society, at Birmingham.
December 1.—Midland Ophthalmological Society, at Birmingham.

CONTEMPORARY OPHTHALMIC LITERATURE

American Journal of Ophthalmology. *April, 1931.*

LLOYD. Heterochromia and allied conditions.
RAIA. A case of heterochromia iridis.
O'BRIEN. Ophthalmic education.
HARMAN. The control of trachoma.
PROCTOR, RICHARDS and OTHERS. Inoculation of the human conjunctiva with bacterium granulosis.
O'CONNOR. The influence on operative results of ocular muscle action under Sherrington's law.
FERREE and RAND. A new type of instrument for testing the light and colour sense.
SPRATT. Two particles of steel in one eye.
LINDER and BARKAN. More about Ernst Fuchs.

Archives of Ophthalmology. *March, 1931.*

DE GRÓSZ. The operative treatment of glaucoma.
HEUER and VAIL. Chronic cisternal arachnoiditis producing symptoms of involvement of the optic nerves and chiasm; pathology and results of operative treatment in four cases.
GREEN. Two per cent. epinephrine solutions as substitutes for laevoglaucosan.
SALIT. Chemical studies of lipids of normal animal lenses, cataractous human lenses and the blood of patients with cataract.
BLATT. Weakness of accommodation.
JOHN. The disturbances of sensibility of the cornea and conjunctiva in xerosis and keratomalacia of adults, with a contribution to the explanation of the genesis of these diseases.
VERHOEFF. Microscopic observations in a case of retinitis pigmentosa.
KUHN. Hereditary optic atrophy (Leber's disease): a clinico-surgical study of a case.
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